

# National Assessment Governing Board

## Assessment Development Committee

November 16 – 17, 2017

### AGENDA

#### Thursday, November 16

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11:15 – 11:30 am	Welcome and Introductions	
	Framework Development Policy <i>Shannon Garrison, Chair</i>	See Framework Policy Tab
	Framework Activities: Issues and Milestones ( <i>SV #5</i> )	
11:30 – 12:15 pm	<ul style="list-style-type: none"><li>Framework and Item Development Timelines <i>Michelle Blair, Assistant Director for Assessment Development</i> <i>Holly Spurlock, NCES</i></li></ul>	Attachment A
12:15 – 12:45 pm	<ul style="list-style-type: none"><li>NAEP Mathematics Assessment <i>Michelle Blair</i></li></ul>	Attachment B
12:45 – 1:30 pm	<ul style="list-style-type: none"><li>NAEP Civics, Geography, U.S. History, and Economics Assessments <i>Eunice Greer, NCES</i></li></ul>	

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#### Friday, November 17

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12:45 – 1:25 pm	Framework Activities: Issues and Timelines ( <i>cont'd</i> ) <ul style="list-style-type: none"><li>NAEP Reading and Writing Assessments <i>Eunice Greer</i></li></ul>	Attachment B
1:25 – 1:45 pm	<ul style="list-style-type: none"><li>NAEP Science and Technology and Engineering Literacy Assessments <i>Cary Sneider, ADC Vice Chair</i></li></ul>	
1:45 – 2:00 pm	Priorities and Next Steps <i>Shannon Garrison</i>	
2:15 – 3:15 pm	<b>Joint Session with Reporting and Dissemination Committee</b> Contextual Variables in the 2017 NAEP Reading and Mathematics Release ( <i>SV #3</i> ) <i>Rebecca Gagnon, Reporting &amp; Dissemination Chair</i> <i>Shannon Garrison, Chair</i> <i>James Deaton and Ebony Walton, NCES</i>	Attachment C
Information Item	Item Review Schedule	Attachment D

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## FRAMEWORK ACTIVITIES: ISSUES AND MILESTONES

A core focus of the Assessment Development Committee (ADC) is to determine what NAEP should assess and prepare content recommendations for Board deliberation and action. With a process that engages a wide array of stakeholders, each NAEP framework outlines these recommendations, describing what students should know and be able to do in a subject area and what will be tested on NAEP.

At the November 2017 Board meeting, the ADC will have an opportunity to discuss upcoming framework activities and policy decisions, and the plans and resources to support these Committee deliberations. The following sections provide overviews on:

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### ADC Priorities

In March 2017, the Committee discussed prospective ADC focus areas as described in the Governing Board’s Strategic Vision and, later, held a “Blue Sky” discussion in August 2017 to consider what and how NAEP assesses and how NAEP should lead within the assessment landscape. The issues raised by the Committee initiated several ongoing discussions about:

- How ADC priorities should be reflected in upcoming framework updates.
- How future NAEP items will be a resource for the field.
- How to establish and maintain partnerships that highlight actionable aspects of results, e.g., to increase classroom teachers’ access to released NAEP items and contextual information.
- How to incorporate how other countries think about changing what they assess.
- Whether to more deeply assess an existing content area or add new content areas.
- How to be intentional about content overlap between different assessments and fulfillment of statutory requirements, e.g., the requirement that reading and mathematics be assessed every two years.

There are multiple pathways to restructuring NAEP assessments into a combined format. The Committee on Standards, Design and Methodology will discuss aspects of these strategies in their November 2017 session, and NCES will share additional strategies for Civics, U.S. History, and Geography during the ADC November 2017 session.

## **Roles for ADC in the Strategic Vision**

The Governing Board is responsible for developing assessment objectives and test specifications for each NAEP assessment, and the ADC is charged with developing the content recommendations and frameworks for full Board deliberation and adoption. The Governing Board's Strategic Vision includes a focus on new approaches to framework updates that contribute to accurate measures of what students know and can do, while maintaining rigorous methods for reporting student achievement trends. Another Strategic Vision focus area for ADC leadership includes guidance for NAEP resources to inform practice.

In terms of upcoming activities for the content of NAEP assessments, all frameworks require an update to address the transition to digital based assessment (DBA). While there are content-specific aspects of this transition for each content area, a Board-commissioned literature review on best practices will be completed by March 2018 to inform a consistent approach to the more general aspects of the paper-to-digital transition.

## **Common Elements of Each Framework Update Project**

Each framework update project will engage stakeholders and content experts to identify needed revisions, via subject-specific factors including:

- Evolution of discipline and implications for NAEP frameworks
- Relevance to students' postsecondary endeavors
- Student achievement trends in terms of contextual factors
- Digital-based assessment issues
- International content and measurement trends

Based on the recent refinements discussed for the Governing Board Framework Development Policy, there are several milestones involved in launching and shepherding projects to create or update NAEP assessment frameworks.

### **MILESTONES: ALL FRAMEWORK PROJECTS**

ADC Discussion with External Experts in the Subject Area(s)
ADC Recommendation for Updating Assessment
Board Action on Charge
Framework Contractor Selection
Trend Scan & Resource Compilation
Panel Meetings (3 to 6)
Full Board Review & Public Comment
Framework Draft Finalized
ADC Final Review of Framework
Board Action
Assessment Administered

The first step is the ADC's framework review, where content experts are invited to a Committee session to provide reflections on the state of the discipline and the extent to which the relevant NAEP framework should be updated. Based on this discussion, the ADC will prepare a recommendation to the full Board about next steps for the framework, including a draft charge for stakeholders who will serve on the Visioning and Framework Development panels convened to draft content recommendations for the ADC's consideration. After Board discussion of the recommendation, the Board will take action on the charge. Staff will work concurrently to procure a contractor to execute the framework development and update process resulting in a draft framework for the ADC's consideration.

The framework contractor will launch the project by compiling resources to support stakeholder meetings. The first meeting of stakeholders will be for the Visioning Panel to discuss the major issues to be addressed in the framework. A subset of the Visioning Panel will continue on to develop a draft updated framework as the Development Panel.

The ADC will closely monitor the framework contractor's work via regular project updates. A draft of the panels' recommended framework will be shared for full Board review and public comment. This feedback will allow the Development Panel to address concerns and finalize the draft recommended framework for the ADC's final review and Board action. The adopted framework is given to NCES to begin assessment development, piloting, and finally administration of the operational assessment based on the new framework.

## ADC Policy Decisions in Years Ahead

At the November 2017 Board meeting, the ADC will have an opportunity to discuss short-, medium-, and long-term framework activities by reviewing upcoming policy decisions, and the plans and resources to support the Committee in these policy deliberations. As a resource for this discussion, Board staff prepared a draft set of milestones, including policy decisions. At the Board meeting, Board and NCES staffs will brief the Committee on anticipated timelines, while providing an overview of the major aspects of each framework.

The session will start with an overview of a draft plan for framework activities and other ADC work in the Strategic Vision, including an NCES overview of assessment development timelines and milestones (see *Assessment Development Milestones* summary below). Then, overviews and discussions will tackle issues specific to each framework. This series of discussions will focus on:

- What are the key questions that need to be answered? What are the issues the ADC is most concerned about?
- What types of criteria and information should the Committee use to guide this work?
- Are the right milestones captured? What milestones may need to be deleted, added, or reshaped?
- Does the sequencing of work in the draft plan reflect the Committee's priorities?

As an example of potential criteria, the following factors were used to develop the draft plan below, capturing all ADC-led activities in the Strategic Vision:

- Frequency of the assessment
- When the framework was last revised
- Which upcoming assessments on the NAEP Assessment Schedule can be impacted
- Which areas of innovation need to be explored
- Capacity for concurrent projects

ADC feedback will be used to refine the draft plan below. Anticipated milestones within each activity are presented in Attachment B.

**DRAFT\* PLAN AND ESTIMATED TIMELINES: ALL ADC STRATEGIC VISION ACTIVITIES**  
(Listed by starting month)

ACTIVITY	START	FINISH	STATUS
Identify NAEP Resources & Information for Practitioners	May 2017	Dec 2020	ADC discussed NAEP Questions Tool in May 2017. Discussion with R&D will start in November 2017 regarding contextual variables.
Update Framework Development Policy	Jun 2017	Mar 2018	ADC began revising policy in Summer 2017. Board discussion to continue in November 2017, with action slated for March 2018.
Review & Update <b>Mathematics</b> Framework (concurrent w/ Reading)	Jun 2017	Mar 2025	State math standards review began in August 2017. Results will be available to inform May 2018 ADC Framework Review and Summer / Fall 2018 Framework Update Project Launch. Timeline includes administering the assessment.
Review & Update <b>Reading</b> Framework (concurrent w/ Math)	Oct 2017	Mar 2025	ADC Framework Review slated for March 2018 to inform Summer / Fall 2018 Framework Update Project Launch. Timeline includes administering the assessment.
Explore New Approaches to Framework Update Processes	Nov 2017	Mar 2019	Using issues raised in November 2017 ADC discussion, expert recommendations will be obtained regarding updating of frameworks.
Update Item Development Policy	Mar 2018	Nov 2018	To begin in 2018.
Review & Update <b>Civics, Geography, and U.S. History</b> Frameworks	May 2018	May 2020	Initial analysis of content issues will begin in Summer/Fall 2018.
Review & Update <b>Economics</b> Framework (Tentative)	Mar 2020	Aug 2021	Depending on the ADC recommendations for Civics, Geography, and U.S. History Frameworks, Economics may or may not be a standalone project.
Review & Update <b>Science and Technology &amp; Engineering Literacy (TEL)</b> Frameworks	Sep 2020	Nov 2022	Initial analysis of content issues slated for 2020.
Review & Update <b>Writing</b> Framework	Mar 2022	Aug 2023	ADC Framework Review slated for March 2022.

As additional context, the Strategic Vision Implementation Activities Report across all Board committees is presented below.

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\* This draft reflects assumptions and will be updated based on Board policy decisions.

***NATIONAL ASSESSMENT GOVERNING BOARD***  
***STRATEGIC VISION – IMPLEMENTATION ACTIVITIES REPORT***  
***NOVEMBER 2017***

On November 18, 2016, the National Assessment Governing Board unanimously adopted its Strategic Vision to focus the Board’s work from 2017-2020. This approval marked the beginning of the implementation phase, which is managed by the staff, overseen by the Board, and conducted in partnership with the National Center for Education Statistics (NCES). For each of the four years during the Strategic Vision’s implementation, the staff will provide annual progress reports to the Governing Board at the August Board meetings. This first annual progress report presented in August 2017 was backward-looking, capturing notable work of the past year to implement the Board’s vision.

Beginning with the November 2017 Board meeting, staff are providing the following implementation activities report to identify the things either underway or currently planned to achieve the ten priorities in the Strategic Vision. This report is a living document and will be updated and enhanced based on Board feedback and project decisions; a version of this report will be included in the materials for each quarterly Board meeting for the duration of the Strategic Vision’s implementation. It is included in each standing committee’s materials to provide a snapshot of the entire work plan, to supplement the more detailed committee-specific progress reports created by staff.

## National Assessment Governing Board Strategic Vision Implementation Activities Report\*

Task Name	Start	Finish	Committee
<b>Strategic Vision</b>	August 4, 2016	March 31, 2025	
<b>SV1 Develop and Sustain Partnerships</b>	November 18, 2016	December 31, 2020	
Work with Partners to Increase Awareness and Use of NAEP	August 4, 2016	December 31, 2020	R&D
Maintain Database of Points of Contact	October 12, 2017	December 31, 2020	R&D
Disseminate Content with/through Partners	October 1, 2016	December 31, 2020	R&D
TUDA Task Force	December 1, 2017	October 16, 2020	Executive Committee
State Policy Task Force	August 8, 2016	August 31, 2020	Executive Committee
<b>SV2 Linking Data</b>	November 18, 2016	December 31, 2020	
Incorporate Ongoing Linking Studies and Consider Additional Work	November 18, 2016	December 31, 2020	COSDAM, NCES
Expand NAEP Linkages to Administrative Data	September 8, 2017	September 8, 2017	NCES
Board Considers What Federal Data Presented with NAEP	September 8, 2017	December 5, 2018	R&D
Learn from Reporting of International Assessments	November 17, 2017	November 18, 2017	R&D
<b>SV3 Expand NAEP Resources</b>	November 18, 2016	December 31, 2020	
Create Tools for New Audiences (also SV4)	April 3, 2018	April 3, 2019	R&D
Develop 'Menu of Engagement'	January 1, 2018	December 31, 2020	R&D
Create 'Brief Case' Studies on NAEP Use (also SV4)	January 1, 2018	December 31, 2020	R&D
Build Teacher Prep Toolkit	August 2, 2018	August 9, 2019	R&D
Share Effective Uses of NAEP	March 1, 2018	October 31, 2018	R&D
Research Uses of NAEP by Various Audiences	March 3, 2017	November 16, 2018	COSDAM, R&D
Improve Understanding of NAEP Achievement Levels	October 12, 2017	December 31, 2020	R&D, COSDAM
Develop Statement of Intended and Appropriate Uses of NAEP	November 16, 2018	May 18, 2019	COSDAM
Host Stakeholder Panels at Board Meetings	August 8, 2016	December 31, 2020	
Disseminate Information on NAEP Technical Procedures to Share Expertise	March 1, 2018	December 31, 2020	COSDAM, NCES
Identify NAEP Resources & Information for Practitioners (also SV6)	May 18, 2017	March 18, 2021	ADC, R&D
<b>SV4 Dissemination and Use of NAEP</b>	November 18, 2016	December 31, 2020	
Post-release Stakeholder Events to Extend Life of Results	April 2, 2018	December 31, 2020	R&D
Update Governing Board Website	October 3, 2016	July 24, 2017	R&D
Expand Capability for More Wide-ranging Communications Approaches and Products	October 12, 2017	December 31, 2020	R&D
Identify Advanced and More User-friendly Approaches to Presenting NAEP Results	October 12, 2017	December 31, 2020	R&D
<b>SV5 Update Frameworks</b>	November 18, 2016	December 31, 2020	
Update Framework Development Policy	June 5, 2017	March 3, 2018	ADC



## National Assessment Governing Board Strategic Vision Implementation Activities Report\*

Task Name	Start	Finish	Committee
Update Item Development Policy	March 1, 2018	November 14, 2018	ADC
Explore New Approaches to Framework Update Processes (also SV8)	November 17, 2017	March 1, 2019	ADC
Review & Update Reading Framework (concurrent w/ Math)	October 9, 2017	March 31, 2025	ADC
Review & Update Mathematics Framework (concurrent w/ Reading)	June 30, 2017	March 31, 2025	ADC
Review & Update Civics, Geography, and U.S. History Frameworks	May 1, 2018	May 15, 2020	ADC
Review & Update Economics Framework (Depends on Board Decision on Social Studies)	March 6, 2020	August 6, 2021	ADC
Review & Update Science and TEL Frameworks	September 1, 2020	November 18, 2022	ADC
Review & Update Writing Framework	March 7, 2022	August 4, 2023	ADC
Update Board Policy on Achievement Levels (Including New Approaches to ALDs)	January 2, 2017	August 4, 2018	COSDAM
<b>SV6 Contextual Variables</b>	<b>November 18, 2016</b>	<b>December 31, 2020</b>	
R&D Review	August 4, 2017	December 30, 2019	R&D
<b>SV7 Long-Term Trend</b>	<b>August 8, 2016</b>	<b>May 18, 2018</b>	
Ed Haertel Overview Paper	August 8, 2016	December 9, 2016	COSDAM
Reaction Papers (4)	December 12, 2016	February 17, 2017	COSDAM
Washington DC Symposium	February 20, 2017	February 20, 2017	Full Board
AERA Symposium	February 20, 2017	February 20, 2017	Full Board
Governing Board Discussions	March 3, 2017	May 18, 2018	Full Board
Governing Board Action	May 18, 2018	May 18, 2018	Full Board
<b>SV8 Other Countries</b>	<b>November 17, 2017</b>	<b>November 17, 2017</b>	
International Assessment Expert Panel	November 17, 2017	November 17, 2017	Full Board
<b>SV9 Assessment Schedule</b>	<b>May 19, 2017</b>	<b>September 24, 2018</b>	
Develop Policy Priorities	May 19, 2017	March 2, 2018	Executive Committee
Review Technical Implications of Combining Assessments	November 17, 2017	May 18, 2018	COSDAM
Revise NAEP Assessment Schedule	March 5, 2018	September 24, 2018	Executive Committee
<b>SV10 Postsecondary Preparedness</b>	<b>August 6, 2016</b>	<b>August 31, 2020</b>	
Ad Hoc Committee Develops Recommendations	August 3, 2017	November 17, 2018	Ad Hoc Committee
Implement Approved Recommendations of Ad Hoc Committee	November 19, 2018	August 31, 2020	Full Board
Continue Research to Gather Validity Evidence on Academic Preparedness for College	August 6, 2016	August 31, 2020	COSDAM

## Assessment Development Milestones



The National Assessment of Educational Progress (NAEP) serves an important function of measuring our nation's educational progress by regularly administering various subject-area assessments to nationally representative samples of students. NAEP transitioned from paper-based to digitally-based assessments in 2015. NAEP assessments consist of discrete items and scenario-based tasks (SBTs). The transition to digitally-based assessments enabled NAEP to include innovative, technology-enhanced items and tasks that enable students to engage in problem solving processes similar to those that would be called upon in real world situations.

The development of digitally-based assessments follows an established process to ensure that NAEP assessments are valid and high quality instruments. The development cycle consists of major stages that include initial design planning and annual development plans, an extensive and iterative process for the development and review of discrete items and scenario-based tasks, and finally content lock down for system integration and quality assurance reviews. The item and scenario-based task creation stage is the most complex stage consisting of iterative reviews by NCES; members of the content area committees comprised of academics, classroom teachers, content experts, and state department assessment directors; and the Assessment Development Committee of the National Assessment Governing Board.

This session will present the stages of cognitive item and scenario-based task development from start to finish, describe the factors that affect the development cycle, and discuss the processes in more detail.

## OVERVIEWS AND PLANS BY FRAMEWORK AREA

In this series of sessions, the Assessment Development Committee (ADC ) will determine issues and activities specific to the different framework areas in the years ahead, including:

- Policy decisions and high priority issues to address
- Criteria and information to guide these discussions
- Whether the milestones and their sequence reflect these issues and criteria

A concluding session will review priorities, next steps, and takeaways for the overall plan. A draft plan lists ADC Strategic Vision activities with tentative start and completion dates:

ACTIVITY	START	FINISH
Identify NAEP Resources & Information for Practitioners	Mar 2017	Dec 2020
Update Framework Development Policy	Jun 2017	Mar 2018
Review & Update <b>Mathematics</b> Framework <sup>1</sup> (concurrent w/ Reading)	Jun 2017	Mar 2025
Review & Update <b>Reading</b> Framework <sup>1</sup> (concurrent w/ Math)	Oct 2017	Mar 2025
Explore New Approaches to Framework Update Processes	Nov 2017	Mar 2019
Update Item Development Policy	Mar 2018	Nov 2018
Review & Update <b>Civics, Geography, and U.S. History</b> Frameworks	May 2018	May 2020
Review & Update <b>Economics</b> Framework	Mar 2020	Aug 2021
Review & Update <b>Science and Technology &amp; Engineering Literacy (TEL)</b> Frameworks	Sep 2020	Nov 2022
Review & Update <b>Writing</b> Framework	Mar 2022	Aug 2023

This tentative plan includes several assumptions and will be revised based on Board policy decisions. The following sections provide background information and anticipated policy decisions specific to each framework area (**bold** above). Each framework project will have a consistent set of steps, with some areas requiring additional steps. Subject areas have also been grouped to facilitate discussion about overlapping content issues.

NAEP Mathematics Framework.....	12
NAEP Civics, Geography, U.S. History, and Economics Frameworks.....	17
NAEP Reading and Writing Frameworks .....	19
NAEP Science and Technology and Engineering Literacy (TEL) Frameworks.....	22
Overarching Projects: Informing Practitioners, Updating Policies, and Exploring New Approaches .....	30

<sup>1</sup> This timeline includes administering the updated assessment.

## NAEP Mathematics Framework

### Policy Decisions

In August 2017, the Committee noted reasons the NAEP Mathematics Assessment should remain exclusively focused on Mathematics, while noting there may be opportunities for other NAEP assessments to be assessed as one domain. Upcoming policy recommendations in mathematics are needed from ADC on the:

- type of framework update to pursue (i.e., whether to convene a Visioning Panel)
- framework recommended for Board adoption

### Informational Resources

The Board awarded a contract to the American Institutes for Research (AIR) in August 2017 to begin reviewing mathematics standards across the country. The attached update describes the project team and plan. The project will result in visual and table descriptions of how NAEP mathematics objectives relate to state standards in mathematics and other content areas. This will be an important resource to inform Board deliberations on framework updates, as well as deliberations of the Visioning and Framework Development Panels that will be convened to draft an updated NAEP Mathematics Framework.

The current plan is to have external experts in mathematics join the ADC for a framework review discussion at the same meeting where the AIR project team will brief the ADC on the findings from the math standards review. These experts will each be invited to share brief papers, summarizing recent developments in the field and providing their perspectives on whether the NAEP Mathematics Framework should be updated to reflect these developments. Collectively, these three to five experts must represent an array perspectives in mathematics, such as:

- Special Issues (e.g., various combinations of direct and inquiry-based approaches)
- School Levels (i.e., elementary, secondary)
- Academia (e.g., cognitive science)
- Practice (e.g., teacher leaders, teacher educators)
- Accessibility (i.e., for students with disabilities and English language learners)
- Sector (e.g., business)

At the November 2017 Board meeting, Michelle Blair, staff to ADC, will provide a briefing on the mathematics framework and mathematics standards review. The ADC discussion will focus on determining the types of information needed for policy decisions ahead and which perspectives should be represented in the upcoming framework review discussion with external experts in mathematics.

### Assessment Content

Since the first assessment was administered in 1990, the [NAEP Mathematics Framework](#) has been anchored to five broad areas of mathematical content:

- Number Properties and Operations
- Measurement

- Geometry
- Data Analysis, Statistics, and Probability
- Algebra

The framework also specifies the cross-cutting cognitive process dimension of the assessment as low, medium, and high complexity. NAEP Mathematics is mandated to be assessed every 2 years. The assessment was last administered in early 2017.

### **MATHEMATICS<sup>2</sup> FRAMEWORK: EXPECTED MILESTONES**

<b>Milestone</b>	<b>Status</b>
Review Mathematics Standards <sup>3</sup>	To be Completed in May 2018
ADC Discussion with External Experts in Mathematics	Anticipated for May 2018, allowing the ADC to simultaneously review the Mathematics Standards report and engage mathematics experts.
ADC Recommendation for Updating Assessment	Based on May 2018 ADC discussion, the ADC will prepare a recommendation on the type of framework update needed, including a draft charge for the Visioning and Development Panels that will be convened. The recommendation would be presented for Board action in Summer / Fall 2018.
Board Action on Charge	
Framework Contractor Selection	A contractor will be selected in Spring 2018 to begin preparing and compiling resources for the Visioning and Development Panel meetings in Summer / Fall 2018.
Trend Scan & Resource Compilation	
Panel Meetings (3 to 6)	After Board action on the charge in 2018, the Visioning Panel will be convened to begin the series of Visioning and Framework Development Panel meetings to prepare a draft framework. ADC will receive ongoing updates. The full Board will review the draft when public comment is being collected. The Development Panel will use Board and public feedback to finalize the draft for Board action.
Full Board Review & Public Comment	
Framework Draft Finalized	
ADC Final Review of Framework	
Board Action	Late 2019 or Early 2020.
Assessment Administered	The Board-adopted framework will be provided to NCES by 2020. After item development, the newly updated assessment would be administered in 2025.

<sup>2</sup> The mathematics framework project will run concurrently with reading, with some staggering in the schedule.

<sup>3</sup> A project update is attached.

# Review of State Curricular Standards in Mathematics: Quarterly Progress Summary #1

## Project Overview

In August 2017, the Governing Board awarded a contract to the American Institutes for Research (AIR) to conduct a Review of State Curricular Standards in Mathematics. The goal of the project is to develop a descriptive and detailed picture of mathematics curricular content across states and how that relates to what NAEP assesses in mathematics. This will be accomplished by collecting the mathematics content standards for grades K through 8 across states, the District of Columbia, and the Department of Defense Education Activity (DoDEA) and comparing them to the assessment objectives in the 2017 NAEP mathematics framework for grades 4 and 8.

The work is to be conducted using a combination of external experts and mathematics specialists within AIR. To reduce the workload—from what would otherwise be 52 individual comparisons—AIR will use the Common Core State Standards in Mathematics (CCSS-M) as a proxy for the standards of the states that have fully adopted the CCSS-M. For the remaining states, AIR will use either their comprehensive list of standards (for non-adopters of CCSS-M) or a partial list of standards encompassing those that are distinct from CCSS-M (for partial adopters or supplementers of CCSS-M). Using the familiarity built during the process of comparing states' standards to the NAEP objectives, the project will identify content in the state standards that is distinct across states, as well as any NAEP content that may not be covered by state standards.

## Project Team

The project leaders includes a project director, responsible for providing day-to-day leadership and guidance and liaising with the Governing Board, and two task leaders responsible for organizing and conducting the comparisons. The project director is Ms. Maria Stephens, who has over 15 years of experience in leading content comparison studies and reports, with a focus on NAEP and international assessments. Task leaders Tad Johnston and Beth Ratway provide additional leadership and expertise in mathematics content. Mr. Johnston has over 20 years of experience as a mathematics educator across all levels of education and he regularly provides technical assistance to districts in the areas of teacher training, curricula, and assessments. He has served as a content expert on numerous studies related to national and state mathematics standards. Ms. Ratway's experience focuses on standards analysis, development, and implementation and the provision of technical assistance at the state level. She has been involved in comparative reviews of mathematics standards in three states and DoDEA, as well as in activities to connect financial literacy standards to mathematics standards in 11 states. In

addition to the project leaders, the project team includes three additional mathematics specialists, senior-level quality assurance reviewers, a data analyst, and research assistants.

## **Project Plan**

The project plan involves AIR specialists conducting extensive preparatory work to compare state standards and NAEP framework objectives, which will then be reviewed and rated for content alignment by a Content Review Committee (CRC) consisting of 15 external experts. The preparatory work will include preparing initial comparison documents, which will also serve as data collection instruments. These documents will include the AIR specialists' initial groupings of NAEP objectives with any state standard(s) that overlaps at least part of the NAEP objective. The specialists will also identify any NAEP objectives (or parts of NAEP objectives) that cannot be grouped with a state standard (i.e., are not aligned), and any state standards that cannot be grouped with a NAEP objective (i.e., are unique). Generally speaking, state standards for Grades K–4 will be reviewed for possible groupings with NAEP grade 4, and state standards for Grades 5–8 will be reviewed for possible groupings with NAEP grade 8—though the AIR specialists will consider and document whether any of the state standards at grades K–4 that were deemed unique from NAEP grade 4 have content overlap with NAEP grade 8 (and vice versa). During the initial preparatory work, AIR specialists will refine the draft alignment rating scale. The comparisons will focus on the conceptual match in mathematics content between the NAEP objectives and state standards, excluding consideration of the level of cognitive complexity represented in the content.

The 15-member CRC—recruited from among members of the Association of State Supervisors of Mathematics (ASSM) (a project partner) and other contacts—will then be convened in a half-day webinar training and, following the training, the CRC will independently and remotely review and rate the groupings proposed in the initial comparison documents. For this work, the CRC will be broken up into five groups, each assigned to a subset of states monitored by the AIR specialist who prepared the initial comparison documents for that subset. During the rating period, the AIR specialists will review standards in other subjects and identify mathematics-related standards in those subjects that are distinct from states' mathematics standards; they will make an initial yes/no rating of coverage in the NAEP mathematics framework. Following the CRC review and rating period, the AIR specialists will compile and aggregate the individual ratings according to a set of decision rules. The CRC will meet in person for a three-day meeting to come to consensus on final ratings for the mathematics standards comparisons and to consider the specialists' yes/no ratings of the mathematics-related standards in other subjects. The final step of the comparisons, undertaken by AIR specialists, will be to eliminate duplication across states in mathematics and mathematics-related standards that have been determined to describe content that is not covered by NAEP.

Data will be analyzed and preliminary results will be reviewed with the project's Technical Advisory Committee (TAC). The five-member TAC also will have been used earlier in the project

to provide input on the analysis and reporting plan.<sup>1</sup> Data analysis will include both quantitative and qualitative analyses of the ratings and comments collected from reviewers and will achieve the following major outcomes: (1) a comprehensive summary of the status of the current NAEP mathematics framework (i.e., the extent to which the NAEP objectives are covered across the 52 states and at which grades); (2) a set of consolidated state mathematics content standards that are *not* reflected in the NAEP framework and the extent to which these are covered across states; and (3) a set of consolidated mathematics-related standards that are *not* reflected in the NAEP framework (or state mathematics standards) and the extent to which these are covered across states and in which subjects. These outcomes will be reflected in three final products: an executive summary with visual representations of the key findings, as well as supporting documentation and a methodological narrative.

To date, the project team has obtained and verified mathematics standards, convened the TAC to review the draft analysis and reporting plan, finalized that plan, begun the preparation of initial comparison documents, and begun the recruitment of the CRC.

## Milestones

The major milestones of the project are summarized below.

Milestone	Estimated Timing
Obtain and verify mathematics standards	8/25/17 – 9/28/17
Convene TAC	10/5/17
Finalize analysis and reporting plan	8/25/17 – 10/12/17
Prepare initial comparison documents	10/13/17 – 12/1/17
Train the CRC	12/6/17
Independent rating/review by CRC	12/7/17 – 1/8/18
Obtain other subjects' standards and review/rate	12/7/17 – 12/22/17
Aggregate and compile ratings	12/11/18 – 1/31/18
In-person consensus meeting	2/6/18 – 2/8/18
Consolidate state standards	2/12/18 – 2/19/18
Analyze data	2/12/18 – 3/12/18
Convene TAC	Mid-March 2018
Prepare report of findings <i>Present findings at quarterly Board meeting</i>	3/19/18 – 5/30/18 <i>5/18/18</i>

<sup>1</sup> The TAC members, approved by the Governing Board, include: Alfinio Flores (University of Delaware), Linda Dager Hall (consultant and NAEP framework author); Scott Mario (Center for Assessment); Norman Webb (University of Wisconsin); and Patricia I. Wright (former Virginia state superintendent).



## NAEP Civics, Geography, U.S. History, and Economics Frameworks

### Policy Decisions

In discussions of priorities for the NAEP Assessment Schedule, the Board has suggested exploring potential efficiencies, noting there may be innovations to pursue in how Civics, Geography, and U.S. History are assessed. Until options are determined, the draft plan accommodates separate projects to update the respective frameworks. Upcoming ADC policy recommendations include the:

- type of framework updates to pursue
- framework(s) recommended for Board adoption

### Informational Resources

At the November 2017 Board meeting, Michelle Blair will provide an overview of the frameworks. Eunice Greer of NCES will brief the ADC on combination options for assessing Civics, Geography, and U.S. History that maintain three separate frameworks.

Discussion will focus on the types of information needed for future policy decisions and steps to formulating an ADC recommendation to the full Board.

### Assessment Content

The NAEP [Civics](#) Framework has been in place since the 1998 assessment, while the NAEP [Geography](#) and [U.S. History](#) Frameworks have been in place since 1994. These three assessments are conducted every four years and have always been assessed concurrently. The NAEP Civics, Geography, and U.S. History Assessments were last assessed in 2014. The NAEP [Economics](#) Framework, which addresses grade 12 only, has been in place since its first assessment in 2006. The NAEP Economics Assessment has been conducted at different intervals. It was last administered in 2012. The next administration is scheduled for 2022. Sub-content areas for each of these four assessments are listed below. Sub-content domains in Civics are organized by “essential questions.”

### SUB-AREAS OF EACH NAEP ASSESSMENT

Civics	Geography	U.S. History	Economics
What are civic life, politics, and government?	Space and Place	Themes in U.S. History	Market Economy
What are the foundations of the American political system?	Environment and Society	Periods of U.S. History	National Economy
How does the government established by the Constitution embody the purposes, values, and principles of American democracy?	Spatial Dynamics and Connections		International Economy
What is the relationship of the United States to other nations and to world affairs?			
What are the roles of citizens in American democracy?			

### COGNITIVE PROCESSES OF EACH NAEP ASSESSMENT

Civics	Geography	U.S. History	Economics
Identifying and Describing	Knowing	Historical Knowledge and Perspective	Knowing
Explaining and Analyzing	Understanding	Historical Analysis and Interpretation	Applying
Evaluating, Taking, and Defending a Position	Applying		Reasoning

### CIVICS, GEOGRAPHY, AND U.S. HISTORY FRAMEWORKS: EXPECTED MILESTONES

Milestone	Status
Analyze Individual Frameworks' Features	Anticipated to start in late 2018. The goal is to identify how content should be configured in assessments.
Determine Options for Assessing Civics, Geography, and U.S. History	
Solicit Feedback on Options	
ADC Discussion(s) with External Experts in Civics, Geography, U.S. History, Economics, and Social Studies	A series of discussions may be required, given the number of different subject areas and issues.
Board/ADC Decision on Options for Assessing Civics, Geography, and U.S. History	Anticipated for 2019.
ADC Recommendation for Updating Assessments	Anticipated to start in 2019. These steps are parallel to the process described for mathematics above. These frameworks' updates may run as concurrent projects for efficiency.
Board Action on Charge	
Framework Contractor Selection	
Trend Scan & Resource Compilation	
Panel Meetings (3 to 6)	
Full Board Review & Public Comment	
Framework Draft Finalized	
ADC Final Review of Frameworks	
Board Action	
Assessment Administered	

### ECONOMICS FRAMEWORK: EXPECTED MILESTONES

Similar process as above, depending on Board decisions about options for assessing Civics, Geography, and U.S. History.

Anticipated to start in 2020.

## NAEP Reading and Writing Frameworks

### Policy Decisions

In August 2017, the Committee noted the current NAEP Reading Framework reflects a time when best practices shifted for reading. The Committee anticipated that framework updates may need to address extensive recent developments in the field regarding reading digitally, writing to sources, and visual literacy. At the same time, there is mandated NAEP reporting of reading and mathematics every 2 years at grades 4 and 8. The overall tentative plan for framework activities (page 11) reflects separate projects to update the NAEP Reading and Writing Frameworks. Upcoming policy recommendations in reading include the:

- type of framework update to pursue
- framework recommended for Board adoption

### Informational Resources

At the November 2017 Board meeting, Michelle Blair will provide a briefing on the NAEP Reading and Writing frameworks. Eunice Greer of NCES will provide a briefing on research within the Institute of Education Sciences (IES) that relates to prospective innovations for the NAEP Reading Assessment.

As in the earlier sessions, this ADC discussion will focus on determining the types of information needed for future policy decisions and which perspectives should be represented in the upcoming framework review discussion with external experts in reading, slated for March 2018.

The experts will each be invited to share brief papers, summarizing trends in the field and whether the NAEP Reading Framework should be updated to reflect these developments. Collectively, these three to five experts must represent an array of perspectives in reading, such as:

- Special Issues (e.g., writing to sources, visual literacy, digital reading)
- School Levels (i.e., elementary, secondary)
- Academia (e.g., cognitive science)
- Practice (e.g., teacher leaders, teacher educators)
- Accessibility (i.e., for students with disabilities and English language learners)
- Sector (e.g., business)

### Assessment Content: Reading

The current [NAEP Reading Framework](#) has been in place since the 2009 assessment, replacing the framework used from 1992 through 2007. Compared to the previous framework, the 2009 Reading Framework increased the emphasis on informational texts, redefined reading cognitive processes, introduced a new systematic assessment of vocabulary knowledge, and added poetry to grade 4.

As a test of reading comprehension, the NAEP Reading Framework requires students to read passages of written English text—either literary or informational—and to answer

questions about what they have read. The assessment addresses three cognitive processes distinguished by text type: locate/recall, integrate/interpret, and critique/evaluate.

NAEP Reading, like NAEP Mathematics, is mandated to be assessed every 2 years. The assessment was last administered in early 2017.

### **Assessment Content: Writing**

Replacing the framework assessed from 1998 through 2007, the current [NAEP Writing Framework](#) was first assessed in 2011 and measures students' ability to respond to a writing task on a computer in an on-demand scenario for three communicative purposes:

- To Persuade, in order to change the reader's point of view or affect the reader's action
- To Explain, in order to expand the reader's understanding
- To Convey Experience, real or imagined, in order to communicate individual and imagined experience to others

The NAEP Writing Assessments evaluates three broad domains of all students' writing responses:

- Development of Ideas
- Organization of Ideas
- Language Facility and Use of Conventions

NAEP Writing is assessed every 4 years. The assessment was last administered in early 2017.

**READING<sup>4</sup> FRAMEWORK: EXPECTED MILESTONES**

<b>Milestone</b>	<b>Status</b>
ADC Discussion with External Experts in Reading (and Writing?)	Anticipated for March 2018.
Board/ADC Decision on including Writing in Reading Framework Update	Anticipated for Summer / Fall 2018.
ADC Recommendation for Updating Assessment	Based on March 2018 ADC discussion, the ADC will prepare a recommendation on the type of framework update needed, including a draft charge for the Visioning and Development Panels that will be convened.
Board Action on Charge	
Framework Contractor Selection	A contractor will be selected in Spring 2018 to begin preparing and compiling resources for the Visioning and Development Panel meetings in Summer / Fall 2018.
Trend Scan & Resource Compilation	
Panel Meetings (3 to 6)	After Board action on the charge in 2018, the Visioning Panel will be convened to begin the series of Visioning and Framework Development Panel meetings to prepare a draft framework. ADC will receive ongoing updates. The full Board will review the draft when public comment is being collected. The Development Panel will use Board and public feedback to finalize the draft for Board action.
Full Board Review & Public Comment	
Framework Draft Finalized	
ADC Final Review of Framework	
Board Action	Late 2019 or Early 2020
Assessment Administered	The Board-adopted framework will be provided to NCES by 2020. After item development, the newly updated assessment would be administered in 2025.

**WRITING FRAMEWORK: EXPECTED MILESTONES**

<b>Milestone</b>	<b>Status</b>
Same process as above, depending on Board decisions about options for assessing Reading and Writing.	
Anticipated to start in 2022.	

<sup>4</sup> The reading framework project will run concurrently with mathematics, with some staggering in the schedule.

## NAEP Science and Technology and Engineering Literacy (TEL) Frameworks

### Policy Decisions

In August 2017, the ADC noted the need for continued discussion about the NAEP Science and TEL Frameworks. Developed by a consortium of 26 states, Next Generation Science Standards (NGSS) were released in 2013 with a unified approach to the content currently represented in two different NAEP assessments, Science and TEL. The ADC has noted the prevalence of NGSS, now adopted in 18 states. Upcoming ADC policy recommendations in science include the:

- type of framework update to pursue
- framework recommended for Board adoption

### Informational Resources

At the November 2017 Board meeting, ADC Vice Chair Cary Sneider will provide an overview of the relationship between NGSS and the NAEP Science and TEL Frameworks. This relationship has been detailed in a 2015 comparison study (page 23).

As in the earlier sessions, this ADC discussion will focus on determining the types of information needed for future policy decisions.

### Assessment Content

The current [NAEP Science Framework](#) has been in place since the 2009 assessment. The assessment was last administered in early 2015 and is typically assessed every 4 years. The first-ever NAEP Technology and Engineering Literacy (TEL) assessment was administered in 2014. The [NAEP TEL Framework](#) addresses students' capacity to use, understand, and evaluate technology as well as to understand technological principles and strategies needed to develop solutions and achieve goals. The next TEL assessment will be in 2018.

#### SUB-AREAS OF EACH NAEP ASSESSMENT

Science	Technology and Engineering Literacy (TEL)
Physical Science	Technology and Society
Life Science	Design and Systems
Earth and Space Sciences	Information and Communication Technology

#### COGNITIVE PROCESSES OF EACH NAEP ASSESSMENT

Science	Technology and Engineering Literacy (TEL)
Identifying Science Principles	Understanding Technological Principles
Using Science Principles	Developing Solutions and Achieving Goals
Using Scientific Inquiry	Communicating and Collaborating
Using Technological Design	

#### SCIENCE AND TEL FRAMEWORKS: EXPECTED MILESTONES

This process will be parallel to the process described for the Civics, Geography, U.S. History, and Economics Frameworks above, with initial steps to identify assessment options for Board deliberation. Anticipated to start in 2020.

# A Comparison Between the Next Generation Science Standards (NGSS) and the National Assessment of Educational Progress (NAEP) Frameworks in Science, Technology and Engineering Literacy, and Mathematics

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## An Executive Summary

September 2015

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The National Center for Education Statistics (NCES) is the primary federal entity for collecting, analyzing, and reporting data related to education in the United States and other nations. It fulfills a congressional mandate to collect, collate, analyze, and report full and complete statistics on the condition of education in the United States; conduct and publish reports and specialized analyses of the meaning and significance of such statistics; assist state and local education agencies in improving their statistical systems; and review and report on education activities in foreign countries.

NCES activities are designed to address high-priority education data needs; provide consistent, reliable, complete, and accurate indicators of education status and trends; and report timely, useful, and high-quality data to the U.S. Department of Education, the Congress, the states, other education policymakers, practitioners, data users, and the general public. Unless specifically noted, all information contained herein is in the public domain.

NCES, IES, U.S. Department of Education  
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September 2015

The NCES Home Page address is <http://nces.ed.gov/>.

The study *A Comparison Between the Next Generation Science Standards (NGSS) and the National Assessment of Educational Progress (NAEP) Frameworks in Science, Technology and Engineering Literacy, and Mathematics* was conducted for NCES under Contract No. ED-IES-12-D-0002/0004 with American Institutes for Research. Mention of trade names, commercial products, or organizations does not imply endorsement by the U.S. Government.

Three reports—an Executive Summary, a Highlights Report, and a Technical Report—document the findings from the study and can be found at <http://nces.ed.gov/nationsreportcard/science>.

**Suggested Citation**

Neidorf, T., Stephens, M., Lasseter, A., Gattis, K., Arora, A., Wang, Y., Guile, S., Holmes, J. (2015). *A Comparison Between the Next Generation Science Standards (NGSS) and the National Assessment of Educational Progress (NAEP) Frameworks in Science, Technology and Engineering Literacy, and Mathematics*. U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved [date] from <http://nces.ed.gov/nationsreportcard/science>.

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## Comparing the NGSS with the NAEP STEM Frameworks: An Executive Summary

New national standards documents have been developed during the past few years in science, technology, engineering, and mathematics (STEM) and are leading to major changes in state curricula and assessments. Knowing how these standards are related to the existing national frameworks for assessing student achievement in STEM areas that are provided by the National Assessment of Educational Progress (NAEP) is important for policymakers, researchers, educators, and the public.

### What standards and frameworks were compared?

The most recently developed national STEM standards are the **Next Generation Science Standards (NGSS)**.<sup>1</sup> The NGSS elaborate a set of concrete student outcomes (performance expectations) for science and engineering across grades K–12. These performance expectations describe what *all* students should know and be able to do at each grade level in order to demonstrate that they have met the standards. Thus, the NGSS inform curriculum development, instruction, professional development, and student assessment. The NGSS are based on three dimensions: (1) disciplinary core ideas within four content domains that include the three natural sciences (physical, life, and Earth and space sciences) and engineering, technology, and applications of science; (2) scientific and engineering practices that elaborate the processes and habits of mind in science and engineering that should be developed and applied (including some mathematics-related practices); and (3) crosscutting concepts that unify the study of science and engineering. For more details on the content domains and practices, see figure 1. The NGSS describe a set of performance expectations at various grades or grade bands that integrate specific content (core ideas in the content domains) with specific practices but do not specify how the performance expectations should be assessed or distributed in grade-based assessments. For example, a grade 4 performance expectation in physical sciences expects students to “use evidence to construct an explanation relating the speed of an object to the energy of that object” and one in engineering design expects students to “generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.” To access the full set of NGSS performance expectations, use the NGSS link in footnote 1.

In comparison, the three **NAEP STEM frameworks—science, technology and engineering literacy (TEL), and mathematics**—are explicitly intended to guide the development of assessments at grades 4, 8, and 12 that cover a range of knowledge and skills; they describe in detail the content and cognitive dimensions to be assessed and how the assessments should be distributed across the categories within these dimensions.<sup>2</sup> There are three content areas in science and three assessment areas in TEL, while the cognitive dimensions describe four broad science practices and three TEL practices that articulate the types of thinking, reasoning, and application required of students (see figure 1). The mathematics framework includes five content areas and a cognitive dimension that defines three levels of mathematical complexity. All three NAEP STEM frameworks define a set of grade-specific content objectives, which are the NAEP framework components most analogous to the NGSS performance expectations. For science and TEL, the content objectives can be combined with different practices to produce a broad range of possible assessment tasks at each grade. For example, the NAEP science framework includes a grade 4 objective in physical science that expects students to demonstrate and apply knowledge that “one way to change matter from one state to another and back again is by heating and cooling.” The NAEP TEL framework includes a grade 4

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<sup>1</sup> The [NGSS](#) were prepared by the NGSS Lead States (coordinated by Achieve) and published in 2013 by the National Academies Press. They are based on the National Research Council’s [A Framework for K–12 Science Education](#), published in 2012. They have been followed up with the National Research Council’s [Developing Assessments for the Next Generation Science Standards](#) in 2014 and [Guide to Implementing the Next Generation Science Standards](#) in 2015.

<sup>2</sup> The NAEP frameworks are published by the National Assessment Governing Board. The most recent [science](#) and [mathematics](#) frameworks were published in 2014 and the [TEL](#) framework was published in 2013.

objective expecting students to “use a systematic process to design a solution to a simple problem.” To access the full set of NAEP content objectives (which are referred to as content statements in science and assessment targets in TEL), use the NAEP framework links in footnote 2.

Exhibit 1. Content and practices dimensions of the NGSS and the NAEP science and TEL frameworks

NGSS <sup>1</sup>	NAEP Science Framework	NAEP TEL Framework
<b>Content domains</b> 1. Physical sciences 2. Life sciences 3. Earth and space sciences 4. Engineering, technology, and applications of science (ETS) <sup>2</sup>	<b>Content areas</b> 1. Physical science 2. Life science 3. Earth and space sciences	<b>Assessment areas</b> 1. Design and systems 2. Technology and society 3. Information and communication technology
<b>Scientific and engineering practices</b> 1. Asking questions and defining problems 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations and designing solutions 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information	<b>Science practices</b> 1. Identifying science principles 2. Using science principles 3. Using scientific inquiry 4. Using technological design	<b>TEL practices</b> 1. Understanding technological principles 2. Developing solutions and achieving goals 3. Communicating and collaborating

<sup>1</sup> This figure does not show NGSS’s third dimension, crosscutting concepts, which apply across the content domains and are reflected in the content of the performance expectations. There is no analogous separate dimension in NAEP.

<sup>2</sup> The ETS content domain includes engineering design and links among engineering, technology, science, and society.

### What was the goal of the study?

The main goal of the study was to determine the extent to which the NGSS performance expectations are aligned with the content objectives and definitions of the practices in the NAEP science and TEL frameworks. An additional goal, which supplements the science and TEL comparisons, was to determine the extent to which NGSS performance expectations involving mathematics-related practices are aligned with the objectives in the NAEP mathematics framework.

### How was the study conducted?

The study compared the relevant aspects of the NGSS with the appropriate NAEP framework at the corresponding grades. The most complete and parallel comparison was with the NAEP science framework, where NGSS performance expectations in the three content domains in the sciences (physical, life, and Earth and space sciences) were compared with the NAEP objectives in the analogous content areas. In these comparisons, NGSS performance expectations in the sciences at grade 4, middle school, and high school were compared with NAEP science objectives at grades 4, 8, and 12; additionally, some performance expectations at grades 3 and 5 were compared. The NGSS performance expectations in the fourth content domain—engineering, technology, and applications of science (ETS)—were compared with objectives in the NAEP TEL framework at grades 4, 8, and 12. Two types of ETS performance expectations were included in the TEL comparisons: those in engineering design in the 3–5 (upper elementary), middle school, and high school grade bands; and those in the sciences with explicit connections to ETS at grade 4, middle school, and high school. For mathematics, the NGSS performance expectations in both the sciences and engineering design that involve mathematics-related practices were compared with NAEP mathematics objectives at grades 4, 8, and 12.

The study, commissioned by the National Center for Education Statistics, was undertaken by researchers from American Institutes for Research, who were responsible for its implementation and analysis, and subject-specific panels of experts, who provided the ratings of alignment described below.

## To what degree are the NGSS covered by NAEP science and TEL?

The main findings from the study focus on the extent to which the content and practices reflected in the NGSS performance expectations are covered by the content and practices in the NAEP science and TEL frameworks. Specifically, the study examined (1) content overlap, (2) content alignment, and (3) practices alignment (each defined below).

### *Content overlap*

Content overlap refers to NGSS performance expectations in the four content domains (shown in figure 1) that were judged as covering related content to NAEP science or TEL objectives at the corresponding grade level. Overlapping objectives were next rated by experts to determine the degree of content alignment (described below). Content overlap, therefore, indicates the *potential* for content alignment between the NGSS and the NAEP science and TEL frameworks at specific grade levels. The results suggest a moderate to substantial degree of content overlap.

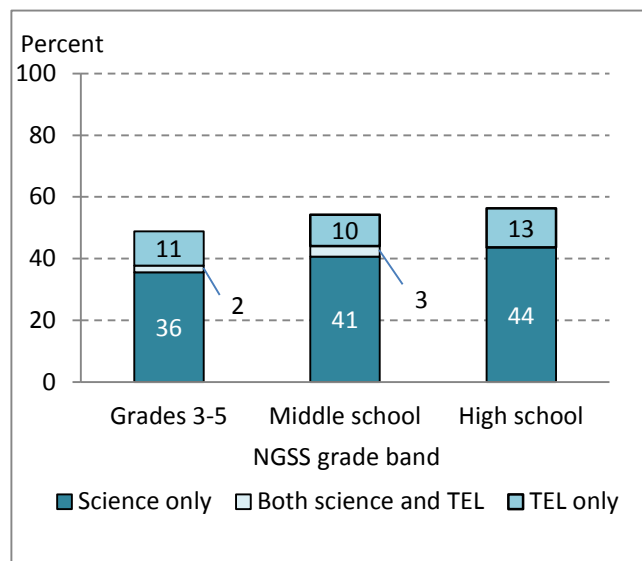
- Fifty-six percent of the NGSS performance expectations across the four content domains at the upper elementary level (grades 3–5) covered content that overlaps with NAEP science or TEL at grade 4. Ninety percent or more of NGSS performance expectations at the middle school and high school levels covered content that overlaps with NAEP science or TEL at grades 8 and 12, respectively.

### *Content alignment*

Content alignment refers to overlapping NGSS performance expectations and NAEP objectives that experts rated as “similar.” Content alignment indicates that the overlapping objectives in the NGSS and NAEP science and TEL frameworks are similar enough in depth, breadth, detail, and focus that they could lead to similar assessment tasks at the corresponding grade level. Content alignment differed by grade and content domain and was lower than content overlap.

- Roughly half of the NGSS performance expectations in the sciences and engineering design were aligned to the NAEP science or TEL framework, or both, at the corresponding grade (see figure 2). At grades 3–5, 38 percent of performance expectations were aligned to the science framework and 13 percent to the TEL framework, with 2 percent in the sciences aligned to both. At the middle school level, 44 percent of performance expectations were aligned to the science framework and 13 percent to the TEL framework, with 3 percent in the sciences aligned to both. At the high school level, 44 percent of performance expectations were aligned to the science framework and 13 percent to the TEL framework.

Figure 1. Percentage of NGSS performance expectations aligned to the NAEP science and TEL frameworks, by framework and grade band



NOTE: For additional information, see the Highlights Report and Technical Report available at <http://nces.ed.gov/nationsreportcard/science>.

- In the sciences, considering only the grade 4 NGSS performance expectations, 36 percent were aligned to the NAEP science framework at grade 4. About one-half of performance expectations in the sciences at the middle school (47 percent) and high school (46 percent) levels were aligned to the NAEP science framework at grades 8 and 12, respectively. Overall, about 9 percent of NGSS performance expectations were aligned to a lower or higher grade level in NAEP science.
- Across grades, the greatest degree of alignment to the NAEP science framework was in life sciences (ranging from 48 to 54 percent of NGSS performance expectations aligned to NAEP). In contrast, the lowest degree of alignment was in physical sciences (ranging from 29 to 42 percent of NGSS performance expectations aligned to NAEP).
- In engineering, technology, and applications of science, 86 percent of NGSS performance expectations in grades 3–5—including both those in engineering design and in the sciences with connections to ETS—were aligned to the NAEP TEL framework, in comparison with 53 percent at the middle school and 45 percent at the high school levels. Rates of alignment were higher for performance expectations in engineering design (from 75 to 100 percent) than for those in the sciences with connections to ETS (from 38 to 75 percent).

### ***Practices alignment***

Practices alignment refers to NGSS performance expectations whose associated scientific and engineering practices were aligned to a NAEP science or TEL practice (shown in figure 1). Practices alignment identifies the primary NAEP science or TEL practices that were aligned to the NGSS performance expectations.

- Ninety-nine percent of NGSS performance expectations in the natural sciences were aligned to NAEP science practices and 81 percent of performance expectations in engineering, technology, and applications of science were aligned to NAEP TEL practices.
- The distribution of NGSS performance expectations across NAEP science and TEL practices, however, differed from the emphasis across practices specified in the NAEP frameworks. Notably, NGSS performance expectations in the natural sciences have a greater emphasis (60 percent) on the NAEP practice of *using science principles* (focused on applying knowledge of science principles to predict, explain, and reason from models) and a great deal less emphasis (4 percent) on *identifying science principles* (focused on the ability to recall, define, relate, and represent science principles) than the NAEP science framework. The emphasis on *using scientific inquiry* (22 percent) and *using technological design* (13 percent) is more comparable to NAEP science. NGSS performance expectations in ETS are concentrated (62 percent) in the NAEP TEL practice of *designing solutions and achieving goals* (focused on the systematic application of technological knowledge, tools, and skills to address problems and achieve goals), with little emphasis on *understanding technological principles* (12 percent) and *communicating and collaborating* (7 percent).

### **Do the mathematics-related practices in the NGSS align with the NAEP mathematics framework?**

Alignment in mathematics refers to NGSS performance expectations whose associated practices involve mathematics that is included in NAEP mathematics objectives at the corresponding grade level or in two adjacent grade levels in the NAEP framework (i.e., grades 4 and 8 or grades 8 and 12). Alignment in mathematics indicates the extent to which the mathematics that may be involved in science and engineering assessment tasks that are developed based on the NGSS is included in the NAEP framework and at what grade level(s).

- All of the mathematics-related performance expectations at grade 4 and at least 87 percent at the middle and high school levels aligned to objectives in the NAEP framework. However, 92 percent of the performance expectations at grade 4 involved some mathematics that was more consistent with NAEP objectives at grade 8 and were aligned at both grade 4 and grade 8; 27 percent of those at the middle school level involved some mathematics that was more consistent with NAEP objectives at grade 12 and were aligned at both grade 8 and grade 12.

### **Conclusions**

The NGSS showed moderate to substantial *content overlap* with the NAEP science and TEL frameworks, but differences in the depth, breadth, detail, or focus of that content resulted in low to moderate levels of *content alignment*, with differences by grade and content domain. *Practices alignment* was strong, but the emphasis of NGSS performance expectations across NAEP science and TEL practices differed from the emphases specified in the NAEP frameworks.

These results suggest that assessments based on the NGSS and the NAEP science and TEL assessments would be aligned to some degree, but each would also have unique content and different emphases in terms of science and TEL practices. Alignment of an NGSS-based assessment with the NAEP science assessment would likely be low at grade 4 and moderate at the middle school and high school levels. In addition, tasks developed to assess the NGSS performance expectations may require students to use some mathematics that is beyond the corresponding grade level in the NAEP mathematics framework; this is in contrast to the NAEP science and TEL assessments, which require mathematics at or below the corresponding grade level.

## Overarching Projects: Informing Practitioners, Updating Policies, and Exploring New Approaches

Other ADC-led activities in the Strategic Vision are summarized below. Some of this work will support framework update projects.

### STRATEGIC VISION PRIORITY #3: EXPANDING NAEP RESOURCES

#### IDENTIFY NAEP RESOURCES FOR PRACTITIONERS

Began in May 2017, with a review of the NAEP Questions Tool. In 2018, the ADC can continue exploring other opportunities to support teachers with NAEP information. Suggestions for new or refined NAEP resources can be shared with the Reporting and Dissemination Committee (R&D) for implementation in Governing Board outreach.

#### IDENTIFY NAEP INFORMATION FOR PRACTITIONERS

(also responds to Strategic Vision (SV) Priority #6: Contextual Variables)

#### Conduct periodic joint ADC-R&D committee discussions of core and subject-specific contextual variables

Starts with November 2017 Board meeting joint session.

#### Determine cross-subject articulation opportunities for contextual variables

Anticipated to start in 2018 and includes updates from NCES on their recent efforts to improve NAEP questionnaires. The Board can also review practice guides and commission papers to inform priorities.

### STRATEGIC VISION PRIORITY #5: UPDATING FRAMEWORKS

#### UPDATE FRAMEWORK DEVELOPMENT POLICY

Began in Summer 2017. Board action is slated for March 2018.

#### UPDATE ITEM DEVELOPMENT POLICY

To begin in 2018.

#### EXPLORE NEW APPROACHES TO FRAMEWORK UPDATE PROCESSES

#### Determine exploratory research related to incremental framework updates

Through the Board's new Technical Services contract awarded to The Human Resources Research Organization (HumRRO), there are opportunities to conduct analyses to explore innovations in how NAEP assessment updates are implemented.

#### Use Profiles of Other Countries to Inform Frameworks, Framework Processes, Contextual Data, and Reporting (also responds to SV6: Contextual Variables & SV8: Other Countries)

Much of this work may be conducted as part of Framework Update Projects. Case studies, for example, may suggest implications for NAEP.

**JOINT SESSION OF THE REPORTING AND DISSEMINATION COMMITTEE AND  
THE ASSESSMENT DEVELOPMENT COMMITTEE:  
CONTEXTUAL VARIABLES IN THE 2017 NAEP READING AND  
MATHEMATICS RELEASE**

This joint session with the Reporting and Dissemination Committee (R&D) addresses the Strategic Vision’s call to “expand the availability, utility, and use of NAEP resources, in part by creating new resources to inform education policy and practice” (SV #3). Furthering this work, the ADC began in May 2017 discussing how NAEP items should be included in outreach to educators .

R&D is now preparing plans for the upcoming release of the 2017 NAEP Reading and Mathematics results. In August 2017, they began discussing which NAEP contextual questions will be informative and valuable to feature in the initial release and messaging. At the November 2017 Board meeting, ADC and R&D will be able to share ideas about the types of contextual information that will maximize the utility and effectiveness of resources and outreach for this release. This discussion is intended to capitalize on the ADC’s ongoing expertise and focus on items and subject-specific contextual variables addressed in NAEP questionnaires, along with the R&D’s expertise and ongoing focus on NAEP reporting and the more general core contextual variables in NAEP questionnaires. Subject-specific variables may be less familiar to R&D Committee members, but offer concrete, actionable, practical results to highlight.

The session will begin with a presentation by NCEs, describing the indices in development for contextual variables in 2017 NAEP Reading and Mathematics – see overview below. The attached list also shows contextual questions given to students, teachers, and school administrators in the 2017 NAEP administration. Not all questions administered as a set may be used in given index, but questions in bold below are designed to fit together. It is also important to note that these variables may or may not be related to any statistically significant differences in NAEP performance.



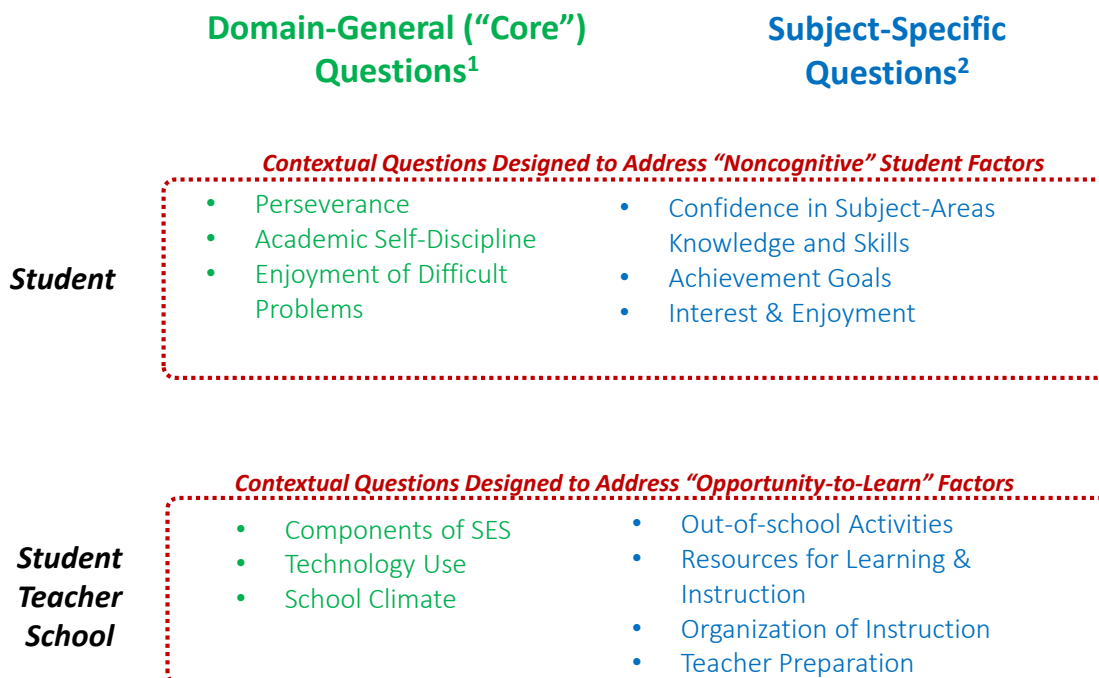
**2017 Core, Mathematics, and Reading Contextual Variables – *Joint Session***

The purpose of the NAEP contextual questionnaires is to put the assessment results into perspective and to provide policy makers, researchers, and the general public with information to understand the results.

The figure below provides an overview of the current questionnaire topics included in the “core” and subject-specific questionnaires (including mathematics and reading). The Reporting and Dissemination

Committee (R&D) reviews the core questionnaires while subject-specific questionnaires are reviewed by the Assessment Development Committee (ADC).

NAEP asks two general types of questions grouped into these two boxes: 1) “noncognitive” student factors describing students’ approaches to learning and their attitudes about the subjects being tested, and 2) “opportunities to learn” factors, which describe what learning opportunities students can access, both at school and outside of school. Some topics can be measured by single questions, whereas other topics are more accurately assessed through indices. Indices are derived variables for reporting based on multiple questions around a common topic or theme.



<sup>1</sup> reviewed by R&D

<sup>2</sup> reviewed by ADC

Index-based reporting was first introduced to the NAEP subject-specific questionnaires in the 2014 NAEP Civics, Geography, and U.S. History reports. The release of the 2014 NAEP Technology & Engineering Literacy results also used index-based reporting.

The 2017 NAEP Mathematics and Reading assessments aimed for a balance of stand-alone single items and indices. Contextual questionnaire development for noncognitive student factors employed an index-based approach to enhance the measurement of these complex topics that cannot be accurately captured with a single question.

NCES is currently evaluating which indices will be featured in the initial release as part of the Nation’s Report Card. During the Friday, November 17 joint session with ADC and R&D, NCES will give a brief overview of the core, mathematics, and reading contextual indices expected as part of the NAEP 2017 results.



**Subject-Specific Contextual Questions in Mathematics – Students**

How often do you use a computer or other digital device (excluding hand-held calculators) for math at school?
How often do you use a computer or other digital device (excluding hand-held calculators) for math homework?
How often do you use the Internet to learn things about math?
How often do you use a calculator?
How often do you receive help or tutoring with math outside of school or after school?
What math class are you taking this year? Select one or more answer choices.
<ul style="list-style-type: none"> <li>• Eighth-grade math</li> </ul>
<ul style="list-style-type: none"> <li>• General eighth-grade math</li> </ul>
<ul style="list-style-type: none"> <li>• Algebra I course</li> </ul>
<ul style="list-style-type: none"> <li>• First year of a two-year algebra course</li> </ul>
<ul style="list-style-type: none"> <li>• Second year of a two-year algebra course</li> </ul>
<ul style="list-style-type: none"> <li>• Algebra I (one-year course)</li> </ul>
<ul style="list-style-type: none"> <li>• Algebra II</li> </ul>
<ul style="list-style-type: none"> <li>• Geometry</li> </ul>
<ul style="list-style-type: none"> <li>• Other</li> </ul>
What math class do you expect to take next year?
In your math class this year, how often have you used the following types of calculators? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>• Basic calculator</li> </ul>
<ul style="list-style-type: none"> <li>• Graphing calculator</li> </ul>
This school year, how often did the following things happen in your math class? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>• My teacher used computers or other digital devices to show us how to work through math problems.</li> </ul>
<ul style="list-style-type: none"> <li>• I used the Internet for my math work.</li> </ul>
<ul style="list-style-type: none"> <li>• My teacher used computers or other digital devices when teaching math to my class.</li> </ul>
<ul style="list-style-type: none"> <li>• My teacher required us to use computers or other digital devices to complete math assignments.</li> </ul>
In this school year, how often have you used a computer or other digital device (excluding hand-held calculators) to complete your math assignments?
In this school year, how often have you used a computer or other digital device (excluding hand-held calculators) to look online for resources for help with your math assignments?
In this school year, how often have you used a computer or other digital device (excluding hand-held calculators) to take an online practice test?
<b>How much does each of the following statements describe a person like you? Select one answer choice on each row</b> <i>This set of six variables represent the “views about math” index.</i>
<ul style="list-style-type: none"> <li>• I enjoy doing math.</li> </ul>
<ul style="list-style-type: none"> <li>• I look forward to my math class.</li> </ul>
<ul style="list-style-type: none"> <li>• I am interested in the things I learned in math.</li> </ul>

<ul style="list-style-type: none"> <li>I think making an effort in math is worthwhile.</li> </ul>
<ul style="list-style-type: none"> <li>I think math will help me even when I am not in school.</li> </ul>
<ul style="list-style-type: none"> <li>I think it is important to do well in math.</li> </ul>
How much do you enjoy solving each of the following types of math problems? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>Addition, subtraction, multiplication, and division</li> </ul>
<ul style="list-style-type: none"> <li>Finding areas of shapes and figures</li> </ul>
<ul style="list-style-type: none"> <li>Solving for probabilities and events (for example, card, coin, marble, and spinner problems)</li> </ul>
<ul style="list-style-type: none"> <li>Solving equations or simplifying expressions</li> </ul>
<ul style="list-style-type: none"> <li>Constructing and building different types of graphs (for example, bar graph, line graph, or box and whisker plots)</li> </ul>
<ul style="list-style-type: none"> <li>Working with geometric figures like rectangles and squares</li> </ul>
<b>Thinking about math, do you think that you would be able to do each of the following? Do not actually solve the problems. Select one answer choice on each row. <i>This set of six variables tap the "confidence in math" index.</i></b>
<ul style="list-style-type: none"> <li>Estimate the weight of 5 apples using pounds (lbs)</li> </ul>
<ul style="list-style-type: none"> <li>Divide 42 stickers by 6 students</li> </ul>
<ul style="list-style-type: none"> <li>Determine a 20 percent tip of a 67 dollar restaurant dinner bill</li> </ul>
<ul style="list-style-type: none"> <li>Describe the properties shared by every isosceles right triangle</li> </ul>
<ul style="list-style-type: none"> <li>Find the amount of carpet needed to cover a rectangular floor if you know its length and width</li> </ul>
<ul style="list-style-type: none"> <li>Know when to take a turkey out of the oven if the time is 10:00 A.M. and it takes 3 hours and 45 minutes to cook</li> </ul>
How often do you use math in everyday life outside of school?
How often do you participate in each of the following activities outside of school? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>Talk about math problems with your friends</li> </ul>
<ul style="list-style-type: none"> <li>Program computers</li> </ul>
<ul style="list-style-type: none"> <li>Play an instrument and read music</li> </ul>
<ul style="list-style-type: none"> <li>Go to websites for help with your math homework</li> </ul>
Have you ever helped your friends with their math homework?
Over the past seven days, how many days have you helped your friends with their math homework? Enter the number of days. _____
How much does each of the following statements describe a person like you? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>I want other students to think I am good at math.</li> </ul>
<ul style="list-style-type: none"> <li>I want to show others that my math schoolwork is easy for me.</li> </ul>
<ul style="list-style-type: none"> <li>I want to look smart in comparison to the other students in my math class.</li> </ul>
<ul style="list-style-type: none"> <li>I want to become better in math this year.</li> </ul>
<ul style="list-style-type: none"> <li>I want to learn as much as possible in my math class.</li> </ul>
<ul style="list-style-type: none"> <li>I want to understand as much as I can in my math class.</li> </ul>
For school this year, how often have you been asked to write long answers (several sentences or paragraphs) to questions on tests or assignments that involved math?
For school this year, how often do you work in pairs or small groups to talk about something that you

have done in math?
How important was it to you to do well on this test?
How easy or difficult was this test?
How much effort did you apply to succeed on this test?
How challenging was taking this test?
How much time pressure did you feel when taking this test?

**Subject-Specific Contextual Questions in Mathematics – Teachers (Grade 4 and 8)**

Which best describes your role in teaching mathematics to this class?
How many students are in this class? Enter the number of students. _____
In a typical week, about how much time in total do you spend with this class on mathematics instruction? Enter the hours and minutes. _____ hours and _____ minutes per week
Are students assigned to this class by achievement level?
Do you create groups within this class for mathematics instruction on the basis of achievement level?
How often do you use each of the following to assess student progress in mathematics? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Multiple-choice tests</li> </ul>
<ul style="list-style-type: none"> <li>• Small project-based assignments</li> </ul>
<ul style="list-style-type: none"> <li>• Individual students collaborating on group assignments</li> </ul>
In your mathematics class this year, how often do you use assessment results to do each of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Discuss the progress your students have made toward individually set goals</li> </ul>
<ul style="list-style-type: none"> <li>• Adjust your teaching strategies to meet the current learning needs of individual students</li> </ul>
<ul style="list-style-type: none"> <li>• Adjust your teaching strategies to reflect your instructional objectives for the classroom</li> </ul>
<ul style="list-style-type: none"> <li>• Discuss class progress with school administrators</li> </ul>
<ul style="list-style-type: none"> <li>• Discuss class progress with other colleagues</li> </ul>
In your mathematics class this year, how often do your students use a computer or other digital device (excluding hand-held calculators) to do each of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Practice or review mathematics topics</li> </ul>
<ul style="list-style-type: none"> <li>• Extend mathematics learning with enrichment activities</li> </ul>
<ul style="list-style-type: none"> <li>• Research mathematics topics on the Internet</li> </ul>
In your mathematics class this year, how often do you do each of the following with individual students to assess their progress in mathematics? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Regularly discuss each student's current level of performance with them</li> </ul>
<ul style="list-style-type: none"> <li>• Set goals for specific progress the student would like to make</li> </ul>
<ul style="list-style-type: none"> <li>• Discuss progress the student has made toward goals previously set</li> </ul>
<ul style="list-style-type: none"> <li>• Determine how to adjust your teaching strategies to meet the student's current learning needs</li> </ul>
In your mathematics class this year, do you use any of the following instructional materials? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Textbooks provided by your district or school</li> </ul>

<ul style="list-style-type: none"> <li>• Other materials provided by your district or school</li> </ul>
<ul style="list-style-type: none"> <li>• Materials found on the Internet</li> </ul>
<ul style="list-style-type: none"> <li>• Other materials (Please specify): _____</li> </ul>
Thinking about your fourth-grade mathematics classes this year, how much emphasis did you place on teaching your students each of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Determine what the problem is asking and the best way to solve it</li> </ul>
<ul style="list-style-type: none"> <li>• Use alternate methods to solve problems when the first method does not work</li> </ul>
<ul style="list-style-type: none"> <li>• Explain one's thinking and make connections between models and equations</li> </ul>
<ul style="list-style-type: none"> <li>• Make assumptions and approximations</li> </ul>
<ul style="list-style-type: none"> <li>• Represent a problem situation with numbers, words, pictures, or charts</li> </ul>
<ul style="list-style-type: none"> <li>• Understand tools for problem solving and limitations of use</li> </ul>
<ul style="list-style-type: none"> <li>• Use clear and precise language when students are discussing their problem solving and reasoning</li> </ul>
Thinking about your eighth grade mathematics classes this year, how much emphasis did you place on teaching your students each of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Make assumptions and approximations</li> </ul>
<ul style="list-style-type: none"> <li>• Use models to explain calculations</li> </ul>
<ul style="list-style-type: none"> <li>• Represent a problem situation in multiple ways including numbers, words, pictures, and charts</li> </ul>
<ul style="list-style-type: none"> <li>• Evaluate a problem-solving process</li> </ul>
<ul style="list-style-type: none"> <li>• Create equations</li> </ul>
<ul style="list-style-type: none"> <li>• Relate what your students know to the real world and make sense of it mathematically</li> </ul>
<ul style="list-style-type: none"> <li>• Use appropriate terminology when referring to the number system, functions, geometric figures, and data displays</li> </ul>
<ul style="list-style-type: none"> <li>• Examine patterns in tables and graphs to generate equations and describe relationships</li> </ul>
Suppose your students did very well on their last mathematics test. How likely do you think each of the following explanations is in this situation? Select one circle in each row.
<ul style="list-style-type: none"> <li>• My students did well because they studied and were prepared.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they put in a lot of effort.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they always do well on tests.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because I taught the concepts well.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they guessed well on the test.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they are just good at math.</li> </ul>
In your mathematics classes this year, how often did you encourage your students to participate in mathematics activities outside of school?
In this school year, how many times did you provide direct opportunities for your students to participate in mathematics activities outside of school?
Approximately how much mathematics homework do you assign to students in this class each day?
To what extent are students permitted to use calculators during mathematics lessons?
What kind of calculator do your students usually use during mathematics lessons?
When you give students a mathematics test or quiz, how often do they use a calculator?
Think about your plans for this mathematics class for the entire year. How much emphasis did you or will you give each of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Numbers and operations</li> </ul>

<ul style="list-style-type: none"> <li>• Measurement</li> </ul>
<ul style="list-style-type: none"> <li>• Geometry</li> </ul>
<ul style="list-style-type: none"> <li>• Data analysis, statistics, and probability</li> </ul>
<ul style="list-style-type: none"> <li>• Algebra and functions</li> </ul>
When you teach mathematics to your fourth-grade class, do you do any of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Set different achievement standards for some students</li> </ul>
<ul style="list-style-type: none"> <li>• Supplement the regular course curriculum with additional material for some students</li> </ul>
<ul style="list-style-type: none"> <li>• Have some students engage in different classroom activities</li> </ul>
<ul style="list-style-type: none"> <li>• Use a different set of methods in teaching some students</li> </ul>
<ul style="list-style-type: none"> <li>• Pace my teaching differently for some students</li> </ul>
When you teach mathematics to your eighth-grade class, do you do any of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Set different achievement standards for some students</li> </ul>
<ul style="list-style-type: none"> <li>• Supplement the regular course curriculum with additional material for some students</li> </ul>
<ul style="list-style-type: none"> <li>• Have some students engage in different classroom activities</li> </ul>
<ul style="list-style-type: none"> <li>• Use a different set of methods in teaching some students</li> </ul>
<ul style="list-style-type: none"> <li>• Pace my teaching differently for some students</li> </ul>

### Subject-Specific Contextual Questions in Mathematics – School Administrators

In your school, are fourth-grade students from different classes typically grouped for mathematics instruction by achievement levels (so that some instruction groups are higher in average mathematics achievement levels than others)?
In your school, how often are fourth-grade students' mathematics placements evaluated?
At each of the following grades, how much emphasis does your school's mathematics curriculum place on instructing students in algebraic concepts, such as patterns and writing number sentences? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Third grade</li> </ul>
<ul style="list-style-type: none"> <li>• Fourth grade</li> </ul>
<ul style="list-style-type: none"> <li>• Fifth grade</li> </ul>
<ul style="list-style-type: none"> <li>• Sixth grade</li> </ul>
Is there a mathematics coach available (full- or part-time) to fourth-grade teachers at your school?
Is there a mathematics coach available (full- or part-time) to eighth-grade teachers at your school?
To what extent are each of the following a responsibility of the mathematics coach(es) available to fourth-grade teachers at your school? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Provide support or assistance about mathematics content</li> </ul>
<ul style="list-style-type: none"> <li>• Provide support or assistance about the teaching of mathematics to individual teachers</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct professional development about mathematics or the teaching of mathematics for groups of teachers</li> </ul>
To what extent are each of the following a responsibility of the mathematics coach(es) available to eighth-grade teachers at your school? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Provide support or assistance about mathematics content</li> </ul>

<ul style="list-style-type: none"> <li>• Provide support or assistance about the teaching of mathematics to individual teachers</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct professional development about mathematics or the teaching of mathematics for groups of teachers</li> </ul>
<p>This year, how many fourth-grade teachers are teaching mathematics in your school? Enter the number of teachers. _____</p>
<p>This year, how many teachers are teaching mathematics in your school? Enter the number of teachers. _____</p>
<p>In your school, approximately what percentage of eighth-grade students enrolls in more than one mathematics class in a year (including summer school or two-block classes) for remediation or to catch up a grade level? Do not include students who receive additional mathematics instruction as part of special education or because of IEP provisions.</p>
<p>To what extent does your school provide up-to-date technology resources for mathematics teaching and learning?</p>
<p>In this school year, did your school offer any of the following activities? Select one circle in each row.</p>
<ul style="list-style-type: none"> <li>• Opportunities for students to discuss mathematics work, including homework, with their teachers</li> </ul>
<ul style="list-style-type: none"> <li>• Peer tutoring in mathematics</li> </ul>
<ul style="list-style-type: none"> <li>• Mathematics competitions</li> </ul>
<ul style="list-style-type: none"> <li>• Chess clubs</li> </ul>
<ul style="list-style-type: none"> <li>• Programming classes</li> </ul>
<ul style="list-style-type: none"> <li>• Mathematics clubs</li> </ul>
<ul style="list-style-type: none"> <li>• Teacher led tutoring sessions in mathematics for groups of students</li> </ul>
<ul style="list-style-type: none"> <li>• Teacher led extra-help sessions in mathematics</li> </ul>
<ul style="list-style-type: none"> <li>• Family mathematics night</li> </ul>
<p>In this school year, what percentage of students has gone to other schools (neighboring middle school, high school, or college) to receive mathematics instruction?</p>
<p>Below are some sentences about students who may have to go to other schools for mathematics instruction. Please indicate which statements apply to your students. Select one circle in each row.</p>
<ul style="list-style-type: none"> <li>• There are students in my school who take high school mathematics classes</li> </ul>
<ul style="list-style-type: none"> <li>• My school provides credit for students who take high school or college mathematics classes</li> </ul>
<ul style="list-style-type: none"> <li>• Students at my school who take high school mathematics classes also take the same tests as high school students taking the same course</li> </ul>
<ul style="list-style-type: none"> <li>• There are algebra classes offered in my school that are equivalent to algebra classes offered at the high schools in my district.</li> </ul>
<p>To what extent is your school's mathematics program structured according to the following resources? Select one circle in each row.</p>
<ul style="list-style-type: none"> <li>• State curriculum standards or frameworks</li> </ul>
<ul style="list-style-type: none"> <li>• District curriculum standards or curriculum guides</li> </ul>
<ul style="list-style-type: none"> <li>• National curriculum standards or frameworks</li> </ul>
<ul style="list-style-type: none"> <li>• Results from district assessments</li> </ul>
<ul style="list-style-type: none"> <li>• Results from state assessments</li> </ul>
<ul style="list-style-type: none"> <li>• Results from national assessments</li> </ul>
<ul style="list-style-type: none"> <li>• In-school curriculum frameworks and standards for learning</li> </ul>
<ul style="list-style-type: none"> <li>• Results from school assessments (e.g., quizzes or tests created by teachers)</li> </ul>

<ul style="list-style-type: none"> <li>• Recommendations from school mathematics department</li> </ul>
<ul style="list-style-type: none"> <li>• Discretion of individual teachers</li> </ul>
<ul style="list-style-type: none"> <li>• Commercially designed programs</li> </ul>
<ul style="list-style-type: none"> <li>• Resources found on the Internet</li> </ul>
To what extent does your school's fourth-grade mathematics curriculum focus on preparation for the following types of assessments? Select one circle in each row.
<ul style="list-style-type: none"> <li>• District assessments</li> </ul>
<ul style="list-style-type: none"> <li>• State assessments</li> </ul>
<ul style="list-style-type: none"> <li>• National assessments</li> </ul>
<ul style="list-style-type: none"> <li>• School assessments (e.g., quizzes or tests created by teachers)</li> </ul>
To what extent does your school's eighth-grade mathematics curriculum focus on preparation for the following types of assessments? Select one circle in each row.
<ul style="list-style-type: none"> <li>• District assessments</li> </ul>
<ul style="list-style-type: none"> <li>• State assessments</li> </ul>
<ul style="list-style-type: none"> <li>• National assessments</li> </ul>
<ul style="list-style-type: none"> <li>• School assessments (e.g., quizzes or tests created by teachers)</li> </ul>

### Subject-Specific Contextual Questions in Reading – Students

How often do you receive help from a tutor, family member, or friend with English/language arts outside of school or after school?
In this school year, how often do you borrow reading materials (such as books or magazines) from your school library or media center?
How often does your teacher ask you to read a book you have chosen yourself?
How often does your teacher ask you to discuss new or difficult vocabulary?
For school this year, how often do you work in pairs or small groups to talk about something that you have read?
For school this year, how often do you have a class discussion about something that the class has read?
For school this year, how often have you been asked to write long answers (several sentences or paragraphs) to questions on tests or assignments that involved reading?
For your English/language arts class this year, how often do you do each of the following? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>• Have a class discussion about something that the whole class has read</li> </ul>
<ul style="list-style-type: none"> <li>• Work in pairs or small groups to talk about something that you have read</li> </ul>
In your English/language arts class this year, when reading a story, article, or other passage, how often does your teacher ask you to do the following? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>• Summarize the passage</li> </ul>
<ul style="list-style-type: none"> <li>• Interpret the meaning of the passage</li> </ul>
<ul style="list-style-type: none"> <li>• Question the motives or feelings of the characters</li> </ul>
<ul style="list-style-type: none"> <li>• Identify the main ideas of the passage</li> </ul>
<ul style="list-style-type: none"> <li>• Identify the themes of the passage</li> </ul>
<ul style="list-style-type: none"> <li>• Analyze two or more texts on the same topic</li> </ul>
In your English/language arts class this year, when reading a story, article, or other passage, how often

does your teacher ask you to do the following? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>Evaluate the main evidence in a persuasive/argument passage</li> </ul>
<ul style="list-style-type: none"> <li>Analyze the author's organization of information in a passage</li> </ul>
<ul style="list-style-type: none"> <li>Critique the author's craft or technique</li> </ul>
<b>How much does each of the following statements describe a person like you? Select one answer choice on each row. <i>This set of five variables comprise the "views about reading" index.</i></b>
<ul style="list-style-type: none"> <li>Reading is one of my favorite activities.</li> </ul>
<ul style="list-style-type: none"> <li>I like talking about books with other people.</li> </ul>
<ul style="list-style-type: none"> <li>I think reading is important.</li> </ul>
<ul style="list-style-type: none"> <li>I enjoy going to a bookstore or a library.</li> </ul>
<ul style="list-style-type: none"> <li>Besides doing homework, how much time do you spend reading outside of school?</li> </ul>
On a typical school day, how much time do you use a computer or other digital device to do your English/language arts schoolwork and homework?
<b>Do you think you would be able to do each of the following when reading? Select one answer choice on each row. <i>This set of ten variables comprise the "confidence in reading" index.</i></b>
<ul style="list-style-type: none"> <li>Figure out the meaning of a word you don't know by using other words in the text</li> </ul>
<ul style="list-style-type: none"> <li>Explain the meaning of something you have read</li> </ul>
<ul style="list-style-type: none"> <li>Figure out the main idea of a text</li> </ul>
<ul style="list-style-type: none"> <li>Judge the reliability of sources (for example, how a website might be biased or inaccurate)</li> </ul>
<ul style="list-style-type: none"> <li>Find text in a reading passage to help you answer a question on a test</li> </ul>
<ul style="list-style-type: none"> <li>Recognize when you don't understand something you are reading</li> </ul>
<ul style="list-style-type: none"> <li>Recognize the difference between fact and opinion in a text</li> </ul>
<ul style="list-style-type: none"> <li>Critique an author's craft or technique</li> </ul>
<ul style="list-style-type: none"> <li>Use evidence in a text to support my answer</li> </ul>
<ul style="list-style-type: none"> <li>Identify the author's perspective in a persuasive text</li> </ul>
How often do you typically do each of the following things outside of school? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>Talk about books (print or online) with other people</li> </ul>
<ul style="list-style-type: none"> <li>Go to my local library to borrow books (print or online)</li> </ul>
<ul style="list-style-type: none"> <li>Read blogs</li> </ul>
<ul style="list-style-type: none"> <li>Use social media (for example, Facebook, Twitter, Instagram)</li> </ul>
<ul style="list-style-type: none"> <li>Help friends with reading homework</li> </ul>
How much does each of the following statements describe a person like you? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>I want other students to think I am good at reading.</li> </ul>
<ul style="list-style-type: none"> <li>I want to show others that my English/language arts schoolwork is easy for me.</li> </ul>
<ul style="list-style-type: none"> <li>I want to look smart in comparison to the other students in my English/language arts class.</li> </ul>
<ul style="list-style-type: none"> <li>I want to learn as much as possible in my English/language arts class.</li> </ul>
<ul style="list-style-type: none"> <li>I want to become a better reader this year.</li> </ul>
<ul style="list-style-type: none"> <li>I want to understand as much as I can in my English/language arts class.</li> </ul>
How often do you typically read each of the following outside of school (print or online)? Select one answer choice on each row.
<ul style="list-style-type: none"> <li>Stories or novels</li> </ul>



• Poems
• Plays
• Autobiographies
• Comic books
• Magazines
• E-mails
• Text messages
How important was it to you to do well on this test?
How easy or difficult was this test?
How much effort did you apply to succeed on this test?
How challenging was taking this test?
How much time pressure did you feel when taking this test?

### Subject-Specific Contextual Questions in Reading – Teachers

How many students are in this class? Enter the number of students. _____
In a typical week, about how much time in total do you spend with this class on English/language arts instruction? Language arts refers to reading, writing, literature, and related topics. Enter the hours and minutes. _____ hours and _____ minutes per week
Which best describes your role in teaching English/language arts to this class? Language arts refers to reading, writing, literature, and related topics. Select one circle.
In a typical week, about how much time in total do you spend with one of your eighth-grade English/language arts classes? Enter the hours and minutes. _____ hours and _____ minutes per week
When reading a story with your students, how often do you ask your students to do the following? Select one circle in each row.
• Summarize the passage
• Interpret the meaning of the passage
• Question the motives or feelings of the characters
• Identify the main ideas of the passage
• Identify the themes of the passage
• Analyze two or more texts on the same topic
• Evaluate the main evidence in a persuasive/argument passage
• Analyze the author's organization of information in a passage
• Critique the author's craft or technique
This school year, to what extent have you emphasized the following cognitive processes when teaching informational and literary texts in class? Select one circle in each row.
• Locate and recall (e.g., identify main ideas or focus on specific elements of a story)
• Integrate and interpret (e.g., make comparisons, explain character motivation, or examine relations of ideas across the text)
• Critique and evaluate (e.g., evaluate text critically from many perspectives or evaluate overall text quality)
In your fourth-grade English/language arts class this year, how often do your students use a computer or other digital device to do each of the following? Select one circle in each row.

<ul style="list-style-type: none"> <li>• Build and practice vocabulary</li> </ul>
<ul style="list-style-type: none"> <li>• Increase reading fluency</li> </ul>
<ul style="list-style-type: none"> <li>• Increase reading comprehension</li> </ul>
<ul style="list-style-type: none"> <li>• Practice spelling and grammar</li> </ul>
<ul style="list-style-type: none"> <li>• Access reading-related websites</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct research for reading projects</li> </ul>
When you teach English/language arts, how often do you use the following strategies? Select one circle in each row.
<ul style="list-style-type: none"> <li>• I teach reading as a whole-class activity.</li> </ul>
<ul style="list-style-type: none"> <li>• I create student groups with the same achievement level.</li> </ul>
<ul style="list-style-type: none"> <li>• I create groups by random assignment.</li> </ul>
<ul style="list-style-type: none"> <li>• I allow students to choose their own groups.</li> </ul>
<ul style="list-style-type: none"> <li>• I use individualized instruction for reading.</li> </ul>
<ul style="list-style-type: none"> <li>• Students work independently on an assigned plan or goal.</li> </ul>
<ul style="list-style-type: none"> <li>• Students work independently on a goal they choose themselves.</li> </ul>
Which best describes how English/language arts instruction is organized for eighth-grade students at this school? Select one circle.
<ul style="list-style-type: none"> <li>• English/language arts is taught primarily as a discrete subject with little or no integration with instruction in other subjects.</li> </ul>
<ul style="list-style-type: none"> <li>• Some English/language arts instruction is integrated with other subjects, and some English/language arts instruction is presented as a discrete subject.</li> </ul>
<ul style="list-style-type: none"> <li>• English/language arts lessons are primarily integrated with instruction in other subjects.</li> </ul>
To what extent have you provided instruction in the following in English/language arts class so far this year? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Fiction</li> </ul>
<ul style="list-style-type: none"> <li>• Literary nonfiction</li> </ul>
<ul style="list-style-type: none"> <li>• Poetry</li> </ul>
<ul style="list-style-type: none"> <li>• Exposition</li> </ul>
<ul style="list-style-type: none"> <li>• Argumentation and persuasion</li> </ul>
<ul style="list-style-type: none"> <li>• Procedural texts and documents</li> </ul>
In your eighth-grade English/language arts class this year, how often do your students use a computer or other digital device to do each of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Build and practice vocabulary</li> </ul>
<ul style="list-style-type: none"> <li>• Increase reading fluency</li> </ul>
<ul style="list-style-type: none"> <li>• Increase reading comprehension</li> </ul>
<ul style="list-style-type: none"> <li>• Access reading-related websites</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct research for reading projects</li> </ul>
In your view, to what extent do the following limit how you teach this class? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Students lacking prerequisite knowledge or skills</li> </ul>
<ul style="list-style-type: none"> <li>• Students with special needs (e.g., physical disabilities, mental or emotional/psychological impairment)</li> </ul>
<ul style="list-style-type: none"> <li>• Disruptive students</li> </ul>

<ul style="list-style-type: none"> <li>• Uninterested students</li> </ul>
When you teach English/language arts to your students, how do you use each of the following resources? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Hardback textbooks, workbooks, or worksheets</li> </ul>
<ul style="list-style-type: none"> <li>• Electronic textbooks</li> </ul>
<ul style="list-style-type: none"> <li>• A variety of children's books (e.g., novels, collections of stories, nonfiction)</li> </ul>
<ul style="list-style-type: none"> <li>• A variety of books (e.g., novels, collections of stories, nonfiction)</li> </ul>
<ul style="list-style-type: none"> <li>• Materials from different curricular areas</li> </ul>
<ul style="list-style-type: none"> <li>• Children's newspapers and/or magazines</li> </ul>
<ul style="list-style-type: none"> <li>• Newspapers and/or magazines</li> </ul>
<ul style="list-style-type: none"> <li>• Reading-related websites or apps</li> </ul>
<ul style="list-style-type: none"> <li>• Reading-related educational games</li> </ul>
Suppose your students did very well on their last English/language arts test. How likely do you think each of the following explanations is in this situation? Select one circle in each row.
<ul style="list-style-type: none"> <li>• My students did well because they studied and were prepared.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they put in a lot of effort.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they always do well on tests.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because I taught the concepts well.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they guessed well on the test.</li> </ul>
<ul style="list-style-type: none"> <li>• My students did well because they are just good at reading.</li> </ul>

### Subject-Specific Contextual Questions in Reading – School Administrators

Is there a reading specialist available (full- or part-time) to fourth-grade students at your school?
To what extent are each of the following a responsibility of the reading specialist(s) available to fourth-grade students at your school? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Provide one-on-one help to students on various reading topics</li> </ul>
<ul style="list-style-type: none"> <li>• Provide one-on-one help to students at various achievement levels</li> </ul>
Is there a literacy coach available (full- or part-time) to fourth-grade teachers at your school?
To what extent are each of the following a responsibility of the literacy coach(es) available to fourth-grade teachers at your school? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Provide assistance/support to individual teachers about English/language arts content or the teaching of English/language arts</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct professional development for groups of teachers about English/language arts content or the teaching of English/language arts</li> </ul>
In addition to English/language arts teachers, does your school have the following personnel to assist with English/language arts class instruction for fourth-grade students with disabilities (SD)? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Special Education teachers (and related service providers)</li> </ul>
<ul style="list-style-type: none"> <li>• Reading specialists or literacy coaches</li> </ul>
<ul style="list-style-type: none"> <li>• Speech pathologists</li> </ul>
<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are trained to work with students with disabilities</li> </ul>

<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are not trained to work with students with disabilities</li> </ul>
<ul style="list-style-type: none"> <li>• Parent volunteers</li> </ul>
In addition to English/language arts teachers, does your school have the following personnel to assist with English/language arts class instruction for fourth-grade English language learners (ELL)? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Certified ELL/bilingual education teachers</li> </ul>
<ul style="list-style-type: none"> <li>• Reading specialists or literacy coaches</li> </ul>
<ul style="list-style-type: none"> <li>• Speech pathologists</li> </ul>
<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are trained to work with students who are ELL</li> </ul>
<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are not trained to work with students who are ELL</li> </ul>
<ul style="list-style-type: none"> <li>• Parent volunteers</li> </ul>
Is there a reading specialist available (full- or part-time) to eighth-grade students at your school?
To what extent are each of the following a responsibility of the reading specialist(s) available to eighth-grade students at your school? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Provide one-on-one help to students on various reading topics</li> </ul>
<ul style="list-style-type: none"> <li>• Provide one-on-one help to students at various achievement levels</li> </ul>
Is there a literacy coach available (full- or part-time) to eighth-grade teachers at your school?
To what extent are each of the following a responsibility of the literacy coach(es) available to eighth-grade teachers at your school? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Provide assistance/support to individual teachers about English/language arts content or the teaching of English/language arts</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct professional development for groups of teachers about English/language arts content or the teaching of English/language arts</li> </ul>
In addition to English/language arts teachers, does your school have the following personnel to assist with English/language arts class instruction for eighth-grade students with disabilities (SD)? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Special Education teachers (and related service providers)</li> </ul>
<ul style="list-style-type: none"> <li>• Reading specialists or literacy coaches</li> </ul>
<ul style="list-style-type: none"> <li>• Speech pathologists</li> </ul>
<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are trained to work with students with disabilities</li> </ul>
<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are not trained to work with students with disabilities</li> </ul>
<ul style="list-style-type: none"> <li>• Parent volunteers</li> </ul>
In addition to English/language arts teachers, does your school have the following personnel to assist with English/language arts class instruction for eighth-grade English language learners (ELL)? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Certified ELL/bilingual education teachers</li> </ul>
<ul style="list-style-type: none"> <li>• Reading specialists or literacy coaches</li> </ul>
<ul style="list-style-type: none"> <li>• Speech pathologists</li> </ul>
<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are trained to work with students who are ELL</li> </ul>
<ul style="list-style-type: none"> <li>• Paraprofessionals or teacher aides who are not trained to work with students who are ELL</li> </ul>
<ul style="list-style-type: none"> <li>• Parent volunteers</li> </ul>
To what extent does your school's fourth-grade English/language arts curriculum focus on preparation for the following types of assessments? Select one circle in each row.

<ul style="list-style-type: none"> <li>• District assessments</li> </ul>
<ul style="list-style-type: none"> <li>• State assessments</li> </ul>
<ul style="list-style-type: none"> <li>• National assessments</li> </ul>
<ul style="list-style-type: none"> <li>• School assessments (e.g., quizzes or tests created by teachers)</li> </ul>
To what extent is your school's English/language arts program structured according to the following resources? Select one circle in each row.
<ul style="list-style-type: none"> <li>• District curriculum standards or curriculum guides</li> </ul>
<ul style="list-style-type: none"> <li>• State curriculum standards or frameworks</li> </ul>
<ul style="list-style-type: none"> <li>• National curriculum standards or frameworks</li> </ul>
<ul style="list-style-type: none"> <li>• In-school curriculum frameworks and standards for learning</li> </ul>
<ul style="list-style-type: none"> <li>• Results from district assessments</li> </ul>
<ul style="list-style-type: none"> <li>• Results from state assessments</li> </ul>
<ul style="list-style-type: none"> <li>• Results from national assessments</li> </ul>
<ul style="list-style-type: none"> <li>• Recommendations from school English/language arts department</li> </ul>
<ul style="list-style-type: none"> <li>• Discretion of individual teachers</li> </ul>
<ul style="list-style-type: none"> <li>• Results from school assessments (e.g., quizzes or tests created by teachers)</li> </ul>
<ul style="list-style-type: none"> <li>• Resources found on the Internet</li> </ul>
To what extent does your school's eighth-grade English/language arts curriculum focus on preparation for the following types of assessments? Select one circle in each row.
<ul style="list-style-type: none"> <li>• District assessments</li> </ul>
<ul style="list-style-type: none"> <li>• State assessments</li> </ul>
<ul style="list-style-type: none"> <li>• National assessments</li> </ul>
<ul style="list-style-type: none"> <li>• School assessments (e.g., quizzes or tests created by teachers)</li> </ul>
During the last two years, to what extent have professional development activities offered to teachers in your school focused on the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Use of English/language arts across the curriculum</li> </ul>
<ul style="list-style-type: none"> <li>• Interpreting and analyzing literature</li> </ul>
<ul style="list-style-type: none"> <li>• Interpreting and analyzing informational texts</li> </ul>
<ul style="list-style-type: none"> <li>• Understanding the cognitive process of an individual when they are reading or writing</li> </ul>
<ul style="list-style-type: none"> <li>• Use of scoring guides to evaluate student work</li> </ul>
<ul style="list-style-type: none"> <li>• Instructional strategies for teaching English/language arts</li> </ul>
How much is your school's ability to provide instruction affected by a lack of the following resources? Select one circle in each row.
<ul style="list-style-type: none"> <li>• Teachers with a specialization in English/language arts</li> </ul>
<ul style="list-style-type: none"> <li>• Computer software for English/language arts instruction</li> </ul>
<ul style="list-style-type: none"> <li>• Library books</li> </ul>
<ul style="list-style-type: none"> <li>• Audio-visual resources for English/language arts instruction</li> </ul>
To what extent does your school provide up-to-date technology resources for English/language arts teaching and learning?

## Core Contextual Variables – Students Grade 4

How important was it to you to do well on this test?
How easy or difficult was this test?
How much effort did you apply to succeed on this test?
How challenging was taking this test?
How much time pressure did you feel when taking this test?
Race/ethnicity questions
About how many books are in your home?
Do you have any of the following in your home?
<ul style="list-style-type: none"> <li>• Access to the Internet</li> </ul>
<ul style="list-style-type: none"> <li>• Clothes dryer just for your family</li> </ul>
<ul style="list-style-type: none"> <li>• Dishwasher</li> </ul>
<ul style="list-style-type: none"> <li>• Your own bedroom</li> </ul>
<ul style="list-style-type: none"> <li>• A desktop or laptop computer (including Chromebooks) that you can use</li> </ul>
<ul style="list-style-type: none"> <li>• A tablet (for example, Surface Pro, iPad, Kindle Fire) that you can use</li> </ul>
<ul style="list-style-type: none"> <li>• A smartphone (for example, iPhone, Samsung Galaxy, HTC One) that you can use</li> </ul>
How often do you use the Internet for homework at home?
How many days were you absent from school in the last month?
How often do you talk about things you have studied in school with someone in your family?
Do any of the following people live in your home? Mother / Stepfather / Foster father or other female legal guardian; Father / Stepfather / Foster father or other male legal guardian
In this school year, how often did you use a laptop or desktop computer (including Chromebooks) during your classes at school? Never / In some classes / In about half of the classes / In more than half of the classes / in all or almost all classes
In this school year, how often did you use a tablet (for example, Surface Pro, iPad, Kindle Fire) during your classes at school? Never / In some classes / In about half of the classes / In more than half of the classes / in all or almost all classes
<b>How much does each of the following statements describe a person like you? Select one answer choice on each row</b> <i>The following four variables tap the “perseverance” index.</i>
<ul style="list-style-type: none"> <li>• I finish whatever I begin</li> </ul>
<ul style="list-style-type: none"> <li>• I try very hard even after making mistakes.</li> </ul>
<ul style="list-style-type: none"> <li>• I keep working hard even when I feel like quitting.</li> </ul>
<ul style="list-style-type: none"> <li>• I keep trying to improve myself, even when it takes a long time to get there.</li> </ul>
<b>In this school year, how often have you done each of the following? Select one answer choice on each row</b> <i>The following four variables tap the “perseverance” index.</i>
<ul style="list-style-type: none"> <li>• I started working on assignment right away rather than waiting until the last minute.</li> </ul>
<ul style="list-style-type: none"> <li>• I paid attention and resisted distractions.</li> </ul>
<ul style="list-style-type: none"> <li>• I stayed on task without reminders from my teacher.</li> </ul>
<ul style="list-style-type: none"> <li>• I paid attention in class even when I was not interested.</li> </ul>
<b>How much does each of the following statements describe a person like you? Select one answer choice on each row</b> <i>The following four variables tap the “desire for learning” index.</i>
<ul style="list-style-type: none"> <li>• I like complex problems more than easy problems.</li> </ul>

<ul style="list-style-type: none"> <li>• I like activities that challenge my thinking abilities.</li> </ul>
<ul style="list-style-type: none"> <li>• I enjoy situations where I will have to think about something.</li> </ul>
<ul style="list-style-type: none"> <li>• I enjoy thinking about new solutions to problems.</li> </ul>
<b>In this school year, how often have you felt any of the following ways about your school? Select one answer choice on each row</b> <i>The following three variables tap the “school climate” index.</i>
<ul style="list-style-type: none"> <li>• I felt awkward and out of place at school.</li> </ul>
<ul style="list-style-type: none"> <li>• I felt happy at school.</li> </ul>
<ul style="list-style-type: none"> <li>• I felt that I learned something that I can use in my daily life.</li> </ul>

### Core Contextual Variables – Students Grade 8

**All of the above, plus:**

How far in school did your mother go?
How far in school did your father go?
Does your mother work?
Does your father work?

### Core Contextual Variables – Teachers

Race/ethnicity questions
Excluding student teaching, how many years have you worked as an elementary or secondary teacher, counting this year?
Excluding student teaching, how many years have you taught mathematics in grades 6 through 12, counting this year
Have you been awarded tenure by the school or district where you currently teach?
Do you hold a regular or standard certificate that is valid in the state in which you are currently teaching?
<ul style="list-style-type: none"> <li>• Yes, I hold a permanent certificate.</li> </ul>
<ul style="list-style-type: none"> <li>• Yes, I hold a temporary certificate. (This type of certificate may require additional coursework, student teaching, etc.)</li> </ul>
<ul style="list-style-type: none"> <li>• No, but I am currently working toward certification.</li> </ul>
<ul style="list-style-type: none"> <li>• No, and I am not planning to obtain certification.</li> </ul>
Did you enter teaching through an alternative route to certification program
Are you certified by the National Board for Professional Teaching Standards in at least one content area?
What is the highest academic degree you hold?
Do you have a major, minor, or special emphasis in any of the following subjects, as part of your undergraduate coursework? Select one circle in each row
<ul style="list-style-type: none"> <li>• Reading, language arts, or literacy education (only Reading and Writing teachers)</li> </ul>
<ul style="list-style-type: none"> <li>• English (only Reading and Writing teachers)</li> </ul>
<ul style="list-style-type: none"> <li>• Mathematics education</li> </ul>
<ul style="list-style-type: none"> <li>• Mathematics</li> </ul>
<ul style="list-style-type: none"> <li>• Other mathematics-related subject such as statistics</li> </ul>
<ul style="list-style-type: none"> <li>• Elementary or secondary education</li> </ul>

<ul style="list-style-type: none"> <li>• Special education (including students with disabilities)</li> </ul>
<ul style="list-style-type: none"> <li>• English language learning</li> </ul>
Since completing your undergraduate degree, have you taken any graduate courses? If yes,
<ul style="list-style-type: none"> <li>• Did you have a major, minor, or special emphasis in any of the following subjects as part of your graduate coursework? (see choices above)</li> </ul>
During the last two years, did you participate in or lead any of the following professional development activities related to the teaching of mathematics / of reading, writing, literature?
<ul style="list-style-type: none"> <li>• College course taken after your first certification</li> </ul>
<ul style="list-style-type: none"> <li>• Workshop or training session</li> </ul>
<ul style="list-style-type: none"> <li>• Mentoring and/or peer observation and coaching as part of a formal arrangement</li> </ul>
<ul style="list-style-type: none"> <li>• Co-teaching / team teaching</li> </ul>
During the last two years, have you received training from any source in any of the following areas? No, I am already proficient / No, I have not / Yes
<ul style="list-style-type: none"> <li>• Basic computer training</li> </ul>
<ul style="list-style-type: none"> <li>• Software applications</li> </ul>
<ul style="list-style-type: none"> <li>• Use of the Internet</li> </ul>
<ul style="list-style-type: none"> <li>• Use of other technology, for example, satellite access, wireless Web, interactive video, closed-circuit television, videoconferencing</li> </ul>
<ul style="list-style-type: none"> <li>• Integration of computers and other technology into classroom instruction</li> </ul>
In this school year, did your school offer training for teachers on how to use computers or other digital devices?
In this school year, have you participated in training on computers or other digital devices through your school?
In this school year, did your school provide you with a laptop computer (including Chromebooks) to use for teaching and class preparation?
In this school year, did your school provide you with a tablet (for example, Surface Pro, iPad, Kindle Fire) to use for teaching and class preparation?
In this school year, which of the following types of computers or other digital devices are available in your school for student use?
How well do the desktop computers in your school work? Repeated for laptops and tablets separately. All computers are functional and operate quickly / All computers are functional, but some run more slowly than others / All computers are functional, but all or almost all run slowly / Some of the computers do not operate and cannot be used / I don't know
How often do you do the following in this school? Select one circle in each row
<ul style="list-style-type: none"> <li>• Teach jointly as a team in the same class</li> </ul>
<ul style="list-style-type: none"> <li>• Observe other teachers' classes and provide feedback</li> </ul>
<ul style="list-style-type: none"> <li>• Engage in discussions about the learning development of specific students</li> </ul>
<ul style="list-style-type: none"> <li>• Work with other teachers in my school to ensure common standards in evaluations for assessing student progress</li> </ul>
In your school, how severe is each problem? Select one circle in each row
<ul style="list-style-type: none"> <li>• The school building needs significant repair.</li> </ul>
<ul style="list-style-type: none"> <li>• Classrooms are overcrowded.</li> </ul>
<ul style="list-style-type: none"> <li>• Teachers have too many teaching hours.</li> </ul>
<ul style="list-style-type: none"> <li>• Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with</li> </ul>



students).
<ul style="list-style-type: none"> <li>Teachers do not have adequate instructional materials and supplies.</li> </ul>
How much does each of the following statements apply to you as a teacher? Select one circle in each row
<ul style="list-style-type: none"> <li>I am satisfied with being a teacher at this school.</li> </ul>
<ul style="list-style-type: none"> <li>My work inspires me.</li> </ul>
<ul style="list-style-type: none"> <li>I am frustrated as a teacher at my school.</li> </ul>
<ul style="list-style-type: none"> <li>I am supported by the teachers at my school.</li> </ul>
Whether a student does well or poorly in school may depend on a lot of different things. You may feel that some of these things are easier for your students to change than others. In school, how possible is it for your students to change each of the following? Select one circle in each row.
<ul style="list-style-type: none"> <li>Being intelligent</li> </ul>
<ul style="list-style-type: none"> <li>Putting forth a lot of effort</li> </ul>
<ul style="list-style-type: none"> <li>Behaving well in class</li> </ul>

### Core Contextual Variables – School Administrators

What grades are taught in your school?
School type
<ul style="list-style-type: none"> <li>Elementary school</li> </ul>
<ul style="list-style-type: none"> <li>Middle or junior high school</li> </ul>
<ul style="list-style-type: none"> <li>Secondary school</li> </ul>
<ul style="list-style-type: none"> <li>Regular school with magnet program</li> </ul>
<ul style="list-style-type: none"> <li>A magnet school or a school with a special program emphasis</li> </ul>
<ul style="list-style-type: none"> <li>Special education school: primarily serves students with disabilities</li> </ul>
<ul style="list-style-type: none"> <li>Alternative school: offers a curriculum designed to provide alternative or nontraditional education, not clearly categorized as regular, special, or vocational education</li> </ul>
<ul style="list-style-type: none"> <li>Private independent school</li> </ul>
<ul style="list-style-type: none"> <li>Private religiously affiliated school</li> </ul>
<ul style="list-style-type: none"> <li>Independent charter school</li> </ul>
<ul style="list-style-type: none"> <li>Charter school administered by local school district</li> </ul>
<ul style="list-style-type: none"> <li>Other (please specify)</li> </ul>
What is the current enrollment at your school?
Approximately what percentage of fourth-graders / eighth-graders in your school is new this year?
About what percentage of this year's fourth-graders / eighth-graders was held back and is repeating fourth / eighth grade?
Of the students currently enrolled in your school, what percentage has been identified as limited-English proficient?
Last school year, approximately what percentage of students at your school enrolled after the first day of school?
Last school year, approximately what percentage of students at your school left before the end of the school year?
About what percentage of your students is absent on an average day? Include excused and unexcused

absences in calculating this rate.
About what percentage of your teachers is absent on an average day? Include all absences in calculating this rate.
Does your school participate in the National School Lunch Program? If yes, how does the school operate the program (student eligibility determined individually or all students in school receive free lunch)? If to all students, what was the base year during which individual student eligibility was collected?
During this school year, about what percentage of students in your school was eligible to receive a free or reduced-price lunch through the National School Lunch Program?
Does your school receive Title I funding?
Approximately what percentage of students in your school receives the following services? Select one circle in each row. Students who receive more than one service should be counted for each service they receive. Please report the percentage of students who receive each of the following services as of the day you respond to this questionnaire.
<ul style="list-style-type: none"> <li>• Targeted Title I services</li> </ul>
<ul style="list-style-type: none"> <li>• Gifted and talented program</li> </ul>
<ul style="list-style-type: none"> <li>• Instruction provided in student's home language (non-English)</li> </ul>
<ul style="list-style-type: none"> <li>• English-as-a-second language (not in a bilingual education program)</li> </ul>
<ul style="list-style-type: none"> <li>• Special education</li> </ul>
During a typical week of school, what is the total number of regularly scheduled volunteers, including parents, working in the school?
Approximately what percentage of students in your school have parents or guardians who do each of the following activities? Select one circle in each row
<ul style="list-style-type: none"> <li>• Volunteer regularly to help in the classroom or another part of the school</li> </ul>
<ul style="list-style-type: none"> <li>• Attend teacher-parent conferences</li> </ul>
Around the first of October, how many TEACHERS held full-time or part-time positions or assignments in this school?
Does your school or district offer tenure to teachers?
Of the following categories of teachers who were full-time teachers at your school at the end of the last school year, what percentage stayed on as full-time teachers for this school year? Select one circle in each row
<ul style="list-style-type: none"> <li>• Non-tenured teachers who had taught for at least one year</li> </ul>
<ul style="list-style-type: none"> <li>• Tenured teachers</li> </ul>
In the last school year, how many full-time teachers were new to your school?
Of the full-time teachers who were new to your school last year, what percentage stayed on as full-time teachers for this school year?
In this school year, which of the following types of computers or other digital devices are available in your school for student use? Select all that apply.
What is the average age of the desktop computers in your school?
In your school, where are desktop computers available for students to work? Select all that apply.
<ul style="list-style-type: none"> <li>• Age and location questions repeated for laptop computers (including Chromebooks) and for tablets</li> <li>• Additional question asking number of laptop computers (including Chromebooks) and tablets</li> </ul>
In your school, is there a wireless Internet connection that students can use for schoolwork? Yes, everywhere or almost everywhere in the school / Yes, in some areas of the school / No
This school year, did your school offer technical support to teachers for computers and tablets used in

this school? Yes, we are partnering with a provider outside the school / Yes, we have technical support staff in the school / No
How often do teachers do the following in this school? Select one circle in each row.
<ul style="list-style-type: none"><li>• Teach jointly as a team in the same class</li></ul>
<ul style="list-style-type: none"><li>• Observe other teachers' classes and provide feedback</li></ul>
<ul style="list-style-type: none"><li>• Engage in discussions about the learning development of specific students</li></ul>
<ul style="list-style-type: none"><li>• Work with other teachers during common planning times to ensure common standards in evaluations for assessing student progress</li></ul>

**Assessment Development Committee  
Item Review Schedule  
October 2017 – March 2018  
Revised October 11, 2017**

Review Package to Board	Board Comments to NCES	Survey/ Cognitive	Review Task	Approx. Number Items	Status
10/10/2017	11/2/2017	Cognitive	2021 Reading (4, 8) Pilot (DI) Passages	24 passages	✓
12/6/2017	12/20/2017	Cognitive	2021 Reading (4, 8) Pilot (SBT) Draft Build	4 tasks	
1/17/18	2/9/18	Cognitive	2022 Civics (8) Pilot (IICs)	30-35 items	
1/17/18	2/9/18	Cognitive	2022 Geography (8) Pilot (IICs)	40-45 items	
1/17/18	2/9/18	Cognitive	2022 U.S. History (8) Pilot (IICs)	32-44 items	
2/15/2018	3/9/2018	Cognitive	2019 Reading (4, 8) Operational (DI)	TBD	
TBD Winter	TBD Winter	Cognitive	2021 Mathematics (4, 8) Pilot (SBT) Draft Build	4 tasks	
3/19/2018	4/2/2018	Survey	2019 Reading (4, 8) Operational	50-60	
3/19/2018	4/2/2018	Survey	2019 Mathematics (4, 8) Operational	60-70	

NOTE: "SBT" indicates Scenario-Based Task  
 "DI" indicates Discrete Item  
 "IIC" indicates Interactive Item Components